RAILWAY TRACK and STRUCTURES

QUIPMENT
CONOMIES
UMBER

this Issue . . .

REA Program
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With 80 Men

What Basic M/W
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FORMERLY
Railway Engineering and Maintenance

THE IMPROVED FAIR, the anchor that takes the Creep out of Creeping!

The IMPROVED FAIR, strong and dependable, has proved through the years that it is The Anchor that takes the creep out of creeping.

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help you reduce right-of-way maintenance costs

Loose rail joint bolts are a costly never-ending maintenance operation. In back of every Reliance Hy-Crome Spring Washer there are over 35 years of continuing research and development by Eaton Reliance engineers and railroad maintenance-of-way engineers. Reliance Hy-Crome Spring Washers are manufactured specifically to combat rail joint bolt looseness.

Manufactured from special alloy spring steel under rigid metallurgical control in all phases of their production, the inherent reactive pressure and wide reactive range automatically compensate for bolt looseness as a result of bolt elongation, normal wear and vibration created by high speeds and heavy wheel loads.

Put Reliance Hy-Crome Spring Washers to work for you to keep rail joint bolts **tighter longer.**

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RELIANCE DIVISION EATON MANUFACTURING COMPANY

Special Steels Spring Lock Washers Hoz-Fas-Ners

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It stays tight . . . and why

Once you install the Bethlehem 811 Rail Brace, it won't loosen, won't slip, can't pop out of place. Its unique wedge-and-spring feature maintains constant pressure on the rail. With the Bethlehem 811, even the most violent side thrusts won't jar the rail out of gage. Here's why:

1. The forged wedge fitting snugly against the rail web and flange, is driven into place. It is then under 20,000-lb spring compression. This compression alone practically eliminates slippage. But the brace has another safety factor . . .

2. The pawl-and-slot locking arrangement. The pawl bolts are an integral part of the brace, which is welded to the plate. Turn the pawls down into the slots in the wedge, and you lock the wedge in position. Now it won't budge, neither will the rail!

This simple yet foolproof rail brace is easy to install . . . nothing needed but a spike maul or hammer. Easy to adjust, too . . . simply disengage the pawls from the slots, advance the wedge to the desired tightness, then reposition the pawls. Spacing of the slots permits 1/16-in. adjustments.

The Bethlehem 811 is bracing turnouts and curves on railroads all over the country. A Bethlehem representative will be glad to take you to a nearby installation and point out to you the details of this dependable brace at first hand. Just call or write the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY
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On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM 811 RAIL BRACE

BETHLEHEM STEEL

Published monthly by Simmons-Boardman Publishing Corporation, 79 W. Monroe St., Chicago 3, Ill. Subscription price: United States and Possessions, and Canada, one year $2.00 (special rate to railroad employees only, one year $1.50). Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 50, No. 3.

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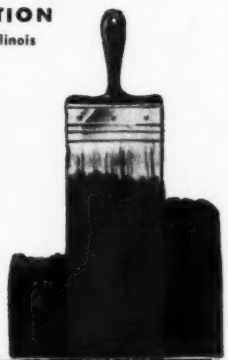

May be applied directly over rust

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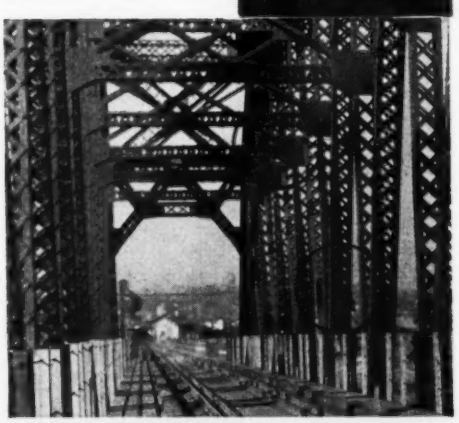

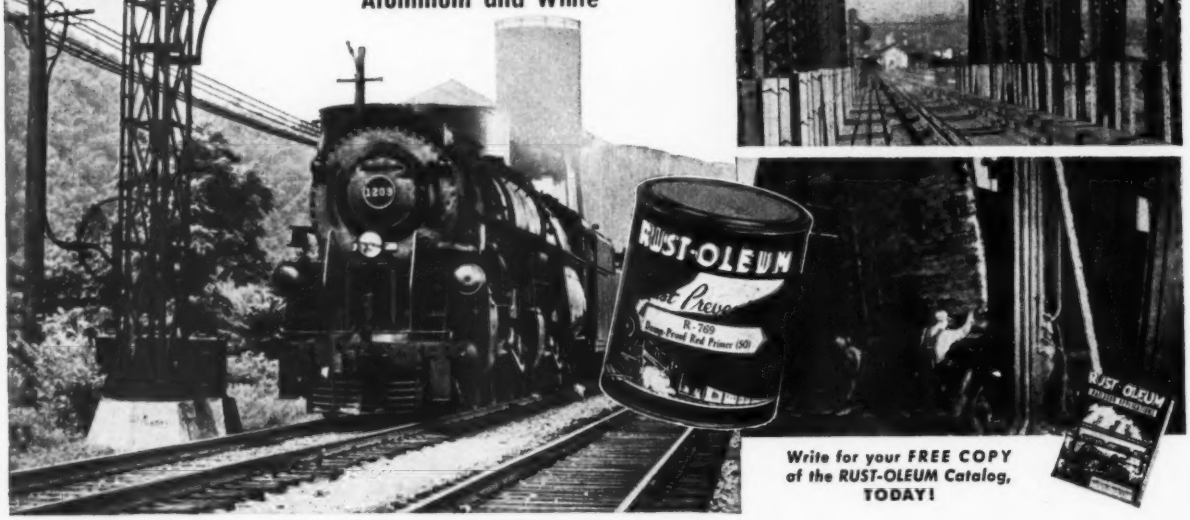

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NORTHWESTS

have been Proved where Railroading is Really

TOUGH!

● Way up in the Canadian Bush Country of Northern Manitoba, some 500 miles north of Winnepeg, a 145-mile railroad is nearing completion across muskeg, lakes and rock outcrops to Lynn Lake. Actually the line is farther north than the line being built into the Labrador Iron Area.

The job is being handled by C. A. Pitts, Ltd., of Toronto, a contractor with long railroad experience. Ten Northwests formed a part of the 2 million dollars worth of equipment that went on the job. These Northwests handled the borrow and fill and the heavy rock cuts through the rocky hog backs of the North. They met the miles of travel requirements, cut the heavy frost and frozen ground and played a large part in keeping the job on schedule.

Northwests have the stamina to meet the rugged conditions of railroad work. They can be loaded or unloaded on a standard flatcar under their own power. They work from the ground or car. They cross tracks easily and they are quickly convertible from Shovel to Crane, Dragline or Pullshovel for the handling of a wide range of work. Your Northwest brings you more years of service and greater versatility and you can have it either Crawler or Rubber Mounted! Let us give you complete details.

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NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE
SHOVEL • CRANE • DRAGLINE • PULLSHOVEL

"All other hauling methods more expensive" report Blythe Brothers

14 D Tournapulls handle long hauls "cheaper than trucks" on railroad job

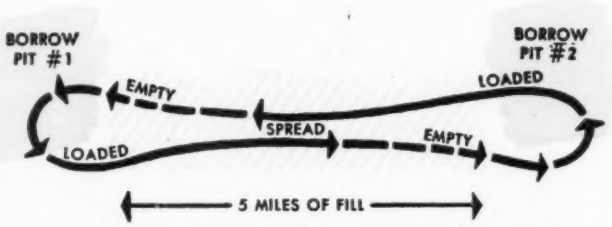
BLYTHE BROTHERS COMPANY, Charlotte, North Carolina, contracted with the Navy Bureau of Yards and Docks to build 28.85 miles of single track railroad for a southeastern Marine Corps training base. Of the million cubic yards involved in the project, most difficult phase was construction of a 250,000-yd. fill over 5 miles of swamp. Fill, mostly sand and sandy loam, was made 20′ wide on top, averaging 5′ in depth, with a 40′ base.

Blythe Brothers studied and field-tested many types of equipment before beginning work on this section. Trucks were tried, but didn't work out because they couldn't get through the soft footing without constant tractor assistance. Hauls were too long for crawlers. Fills were too narrow for most self-propelled scrapers. Then Blythe Brothers tried D Tournapulls. These did the trick. "D's" had the ability to pull through the soft fill and turn on its 20-ft. width. Top haul speed of 28 mph made them economical even on hauls of 2½ miles or more. So, the Company rented 6 "D's" to add to their own fleet of 8 . . . assigned all swamp work to the 14 Tournapulls and several draglines for sidecasting.

Two major reasons for selecting D Tournapulls were their ability to "go-anywhere" in soft, spongy footing, and make high-speed turns on narrow fills. Most units were driven to job under own power from cities 60 to 70 miles away.

2 loads hourly on 10-mile cycle

With only 2′ to 3′ to the water table in the borrow pits, and despite rain nearly every day, the rubber-tired units



At start of project, draglines mucked out 2½′ on both sides of fill, wasting it along sides. The "D's" then started at one end of embankment area, placed 3′ of sand lift along entire 5-mile stretch. "Figure-8" operation was then started with units hauling material from borrow pits at both ends of fill.

FOR LOWEST-NET-COST-PER-YARD

LeT

consistently loaded 6.5 pay yards of root-laced dead sand. Working a "figure-8" pattern totaling 10 miles, each "D" delivered 2 loads per 50-minute hour. Haul and return speed averaged 12 mph.

Says Project Manager George F. Thibodeau, "Other hauling methods were studied, including trucks, and actual field trials were made. All were found to be more expensive than the D Roadster operation."

Excellent planning and supervision

Efficiency was increased, field engineers report, by Blythe Brothers' excellent initial planning, plus a rigidly-followed maintenance program. Despite adverse conditions, the haul road was maintained and sprinkled constantly. Every detail of the job showed alert supervision to help equipment deliver maximum output.

Ask your LeTourneau-Westinghouse Distributor for literature on how to increase *your* job efficiency. He will be glad to help you, any time. He will also demonstrate Tournapulls on your job. Make a test. You'll find the 7-yd. 122 hp "D's" have ample capacity to work profitably in pusher fleets. They also have the self-loading ability to economically handle scattered finishing and other one-man odd jobs. Every dirtmoving job needs at least one "D" as a "handy man".

Push-loaded, Tournapull with 1-ft. sideboards, gets 6½ yds. of dead sand and sandy loam in less than 45 seconds. The "D's" worked a "figure-8" cycle, loading at both ends of the 5-mile fill.

Spread, taking only 15 seconds, is made on the run at 20 to 25 mph. According to Blythe Brothers, the "D's" have delivered 3 loads per hour under best conditions over the 10-mile, 2-load cycle . . . averaging 18 mph on haul and return.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-528-RR

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Get all of the facts about the Pullman-Standard Track Maintenance equipment that has successfully set new records for speed and economy.

Study the engineering and construction details of this equipment and see why track maintenance costs can be reduced so much.

Look at the performance of the Pullman-Standard Power Ballaster, Power Cribber or Power Cleaner. Compare it with any other available equipment and see why, mile after mile and year after year, these Pullman-Standard built units can assure better, faster, lower cost track maintenance.

A Pullman-Standard representative will be glad to give you *all* the facts.

YOUR NEEDS CREATE THE PULLMAN "STANDARD"

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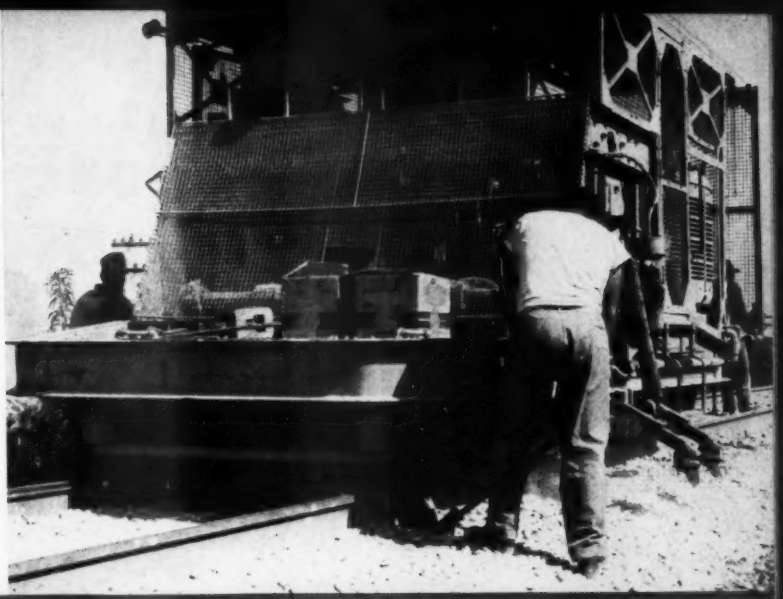
PULLMAN-STANDARD

Power Ballaster

With a production rate of 500 to 700 feet an hour, a Pullman-Standard Power Ballaster, run by a single operator, can be efficiently manned by a crew of 10 to 15 men. Case history studies made on 14 railroads prove that this unit will give more feet of finished tamped track per hour, with less labor and maintenance, than any other production tamper.



PULLMAN-STANDARD

Power Cleaner

and Winch Car Team

For the first time both track shoulders can be cleaned simultaneously at 1000 to 1200 feet per hour with only four men. Even in multiple track territory, the shoulder plus half the six-foot are cleaned to a depth of eight to ten inches below the tie base at the same high rate and with the same low labor complement. Your ballast cleaning costs can be reduced by as much as 50%.

PULLMAN-STANDARD

Power Cribber

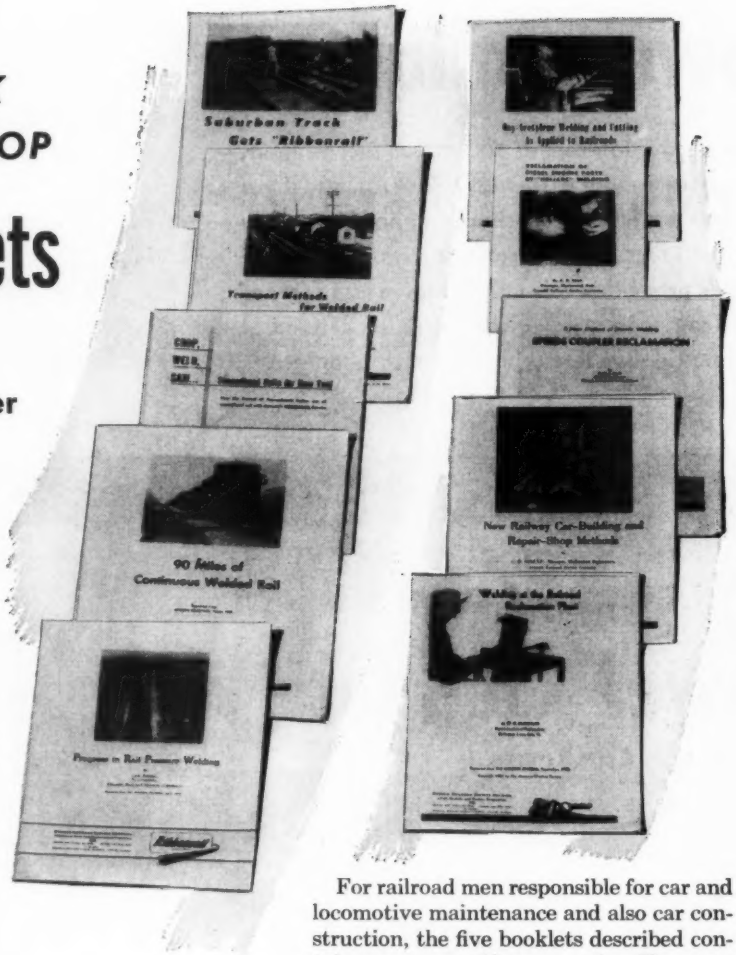
The Pullman-Standard Power Track Cribber gives you two cribs a minute, with a single operator. With a normal production rate of 100 to 225 track-feet per hour, its interchangeable 4-, 5-, and 6-inch digger tips enable it to crib efficiently and economically in any type of ballast, regardless of cementation.

for the man

...ON TRACK
...IN THE SHOP

10 Helpful Booklets

use coupon below to order by number


Suburban Track Gets "Ribbonrail"
Transport Methods for Welded Rail
90 Miles of Continuous Welded Rail
Progress in Rail Pressure Welding
New Railway Car-Building and Repair-Shop Methods
Welding at the Railroad Reclamation Plant

For the engineering department and others interested, five reprints are on continuous rail and OXWELD'S RIBBONRAIL Service.

1 "Suburban Track Gets RIBBONRAIL"—the laying and use of continuous rail in busy Chicago suburban traffic.

2 "Transport Methods for Welded Rail"—answers many questions on how continuous rail is transported and laid.

3 "Crop, Weld, Saw—Secondhand Rails for New Yard"—shows how an Eastern railroad prepared and welded rail into longer lengths for a new switch yard.

4 "90 Miles of Continuous Welded Rail"—important facts on welded rail engineering and economics from a railroad that has wide experience with RIBBONRAIL Service.

5 "Progress in Rail Pressure Welding"—an 8-page reprint of a technical paper delivered at a national meeting of the American Welding Society.

The terms "Heliarc" and "Unionmelt" are registered trade-marks and "Ribbonrail" is a service-mark of Union Carbide and Carbon Corporation.

Use the coupon below to get any or all of these *free* booklets. Be sure to designate the booklets you want by circling the numbers on the coupon.

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For railroad men responsible for car and locomotive maintenance and also car construction, the five booklets described contain many new ideas on using HELIARC, sigma, UNIONMELT, and oxy-acetylene welding.

6 "Oxy-Acetylene Welding and Cutting as Applied to Railroads"—a technical paper written by the welding supervisor of a large southern railroad. Covers car and diesel locomotive practices.

7 "Reclamation of Diesel Engine Parts by HELIARC Welding"—repairs of many types of diesel parts—aluminum, stainless, cast iron—are given in this 10-page reprint.

8 "A New Method of Electric Welding Speeds Coupler Reclamation"—a large Midwestern road has adopted UNIONMELT welding to reclaim worn couplers more efficiently.

9 "New Railway Car-Building and Repair Shop Methods"—latest wrinkles in car-building by UNIONMELT welding and also valuable information on HELIARC and sigma welding.

10 "Welding at the Railroad Reclamation Plant"—how a Midwestern railroad that reclaims 175 different parts uses the oxy-acetylene process to make worn parts usable.

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Circle the numbers of the booklets you want. If you want more than one copy please indicate.

For additional information, use coupon, page 122

Off-track compressor-tractor takes air power anywhere

LE ROI TRACTAIR

provides versatility for extra hours of usage

Do all these jobs — and more — with Tractair:

- Tamp ties; drive spikes.
- Break pavement.
- Drive mail point for grouting operation.
- Do ditching, light grading, weed mowing.
- Drive earth augers.
- Stockpile ballast, cinders, other materials.
- Handle off-season work for B&B, Signal, T&T, and Water-Service Departments.

Le Roi-CLEVELAND No. 10 Tie Tamper, shown at right, weighs only 36 lbs. Section hands like it and can handle it without tiring. The work is faster and more uniform.

TRACTAIR'S low-cost, mobile air power lets you make more use of work-saving Le Roi-CLEVELAND air tools. For example, Tractair delivers enough air to run eight standard tie tampers — helps your section hands tamp fast and uniformly.

By using other attachments, your men multiply Tractair's usefulness. They can use it to lift, load, auger, mow, backfill, power a winch, plow snow, and do the work of other specialized equipment.

Yes, sir, this combination 105-cfm compressor and 35-hp tractor is adaptable to many M/W jobs. It has good traction and low center of gravity—can be driven almost everywhere. It readily crosses or straddles heavy-duty rail. It climbs embankments and works on a two-to-one slope with safety.

We'd like to show you Tractair at work, so you can get a first-hand picture of its money-saving usefulness. Just write and tell us when it's convenient. And — ask for job-data sheets and bulletins.

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A Subsidiary of Westinghouse Air Brake Co.

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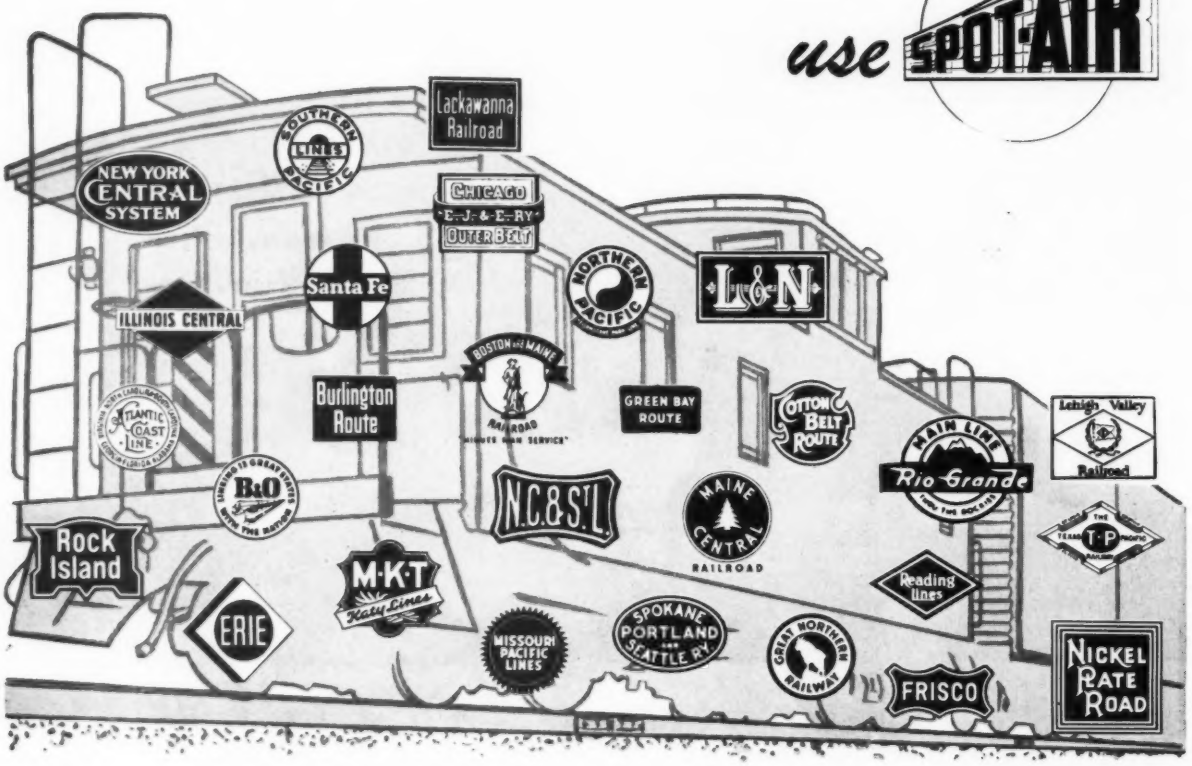
Tractair operates air-motor-driven auger up to 16" diameter. Hydraulic control keeps auger at desired angle. Horizontal auger also available.

Front-end loader is attached to Tractair in only a few minutes, cuts the cost of handling ballast, cinders, other materials.

A backfill blade adapts the versatile Tractair for such jobs as filling trenches, light grading, and other light dozing work.

These leading railroads use SPOT-AIR



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- TIE TAMPING
- SPIKE DRIVING
- BOLT TIGHTENING
- WOOD BORING
- PAINT SPRAYING
- ROCK DRILLING
- CONCRETE BREAKING

A coast-to-coast network of the country's leading railroads now depends on the SPOT-AIR compressor to furnish air power for their section gangs. It can easily handle four Ingersoll-Rand MT-4 tie tampers or a wide range of I-R air tools for roadbed work, bridge and building, and grade crossing maintenance.

Although the 3R-36 SPOT-AIR stands only 32 inches high on a 27 inch baseplate, it delivers rated 36 cfm of free air at 80 psi. This 265 pound, gasoline-driven compressor is easily transported on its own wheelbarrow mounting or on a section-car.

Your nearest Ingersoll-Rand representative will be glad to give you the full story on the versatile SPOT-AIR compressor and the air tools it operates.

◀ Type 3R-36
Weight: 265 pounds
32 inches high
27 inches wide

The 3R-36 SPOT-AIR operating four MT-4 tie tampers. ▶

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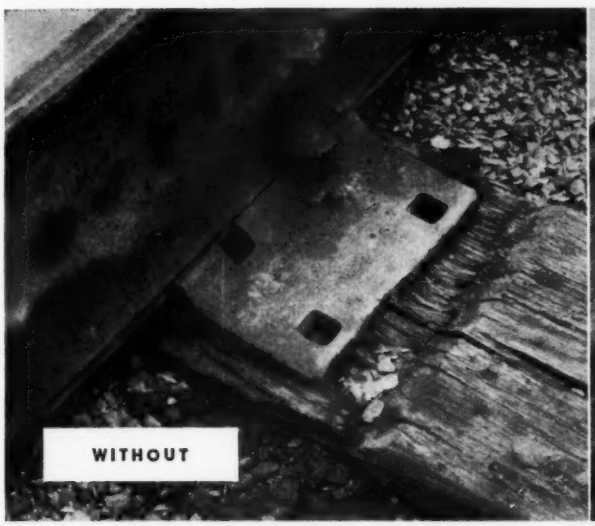

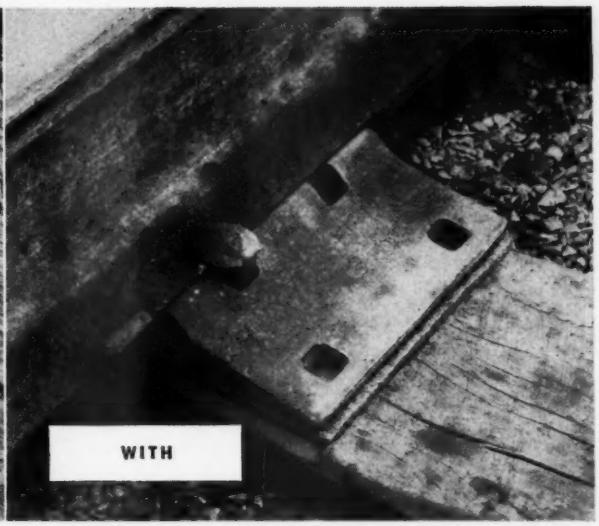

1 **Lengthen crosstie life**—By cushioning the tremendous shock of impact, eliminating tie abrasion and cutting action, the Burkart Tie Pad is successfully proving to be the most effective, most economical prolonger of crosstie life on the market today. Combining the toughest available structural fibre and a tough, abrasion- and shear-resistant high density binder, fused under great pressure, into a dense, rugged mat, the Burkart Tie Pad permanently protects the tie against destruction under the tie plate.

Strong and resilient, the Burkart Tie Pad constantly maintains full bearing strength and density, does not become brittle in severest cold, does not flow in extreme heat, seals against grit, resists moisture and preserves the vital tie area from fungus, brine, weed sprays, oil, vermin, etc., commonly found along the right-of-way.

Why M/W Engineers are choosing Burkart Tie Pads

2 **Forestall Secondary Track Problems**—Rail end batter, spike loosening, regauging and reballasting are materially reduced by the Burkart Tie Pad. Its grasping action prevents shifting of the pad, and spikes hold. Joint bars remain tight. Its shock-absorbing resiliency protects against destructive movement, "rail wave" and drifting of ballast.

3 **Reduce Maintenance and Replacement Cost**—Labor costs money—when you invest in Burkart Tie Pads, you save on labor and materials involved in *replacement* of ties; *resetting* of spikes; *tightening* of joint bars; tie *tamping* and *regauging*. These are substantial, traceable dividends that will show up in black ink on *your* railroad's Financial Statement.

SEE FOR YOURSELF how rugged Burkart Tie Pads can save you money. Test them at trouble spots on your railroad—on bridge ties and at switches and curves, even on your straightaways. Send for sample, prices or additional information. If you wish, an experienced Burkart technical representative will gladly consult with you.

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4900 North 2nd Street • St. Louis 7, Mo.

THE BURKART TIE PAD
with or without adhesive

PENTA IS THE CLEAN PRESERVATIVE FOR LONGER WOOD LIFE

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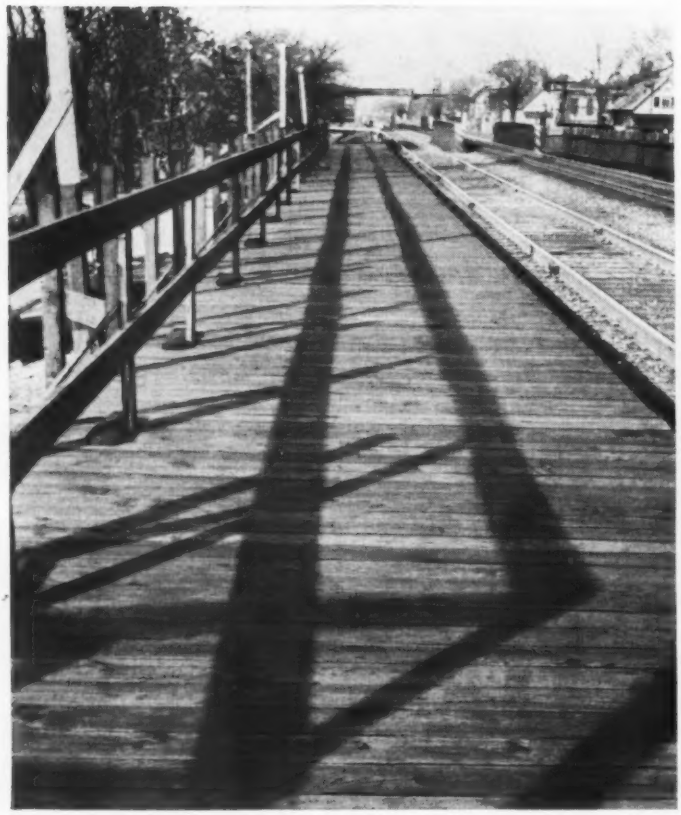

Chicago and Northwestern Railroad chooses PENTA-treated wood for Belmont Station platform . . . gains *clean* protection against termites and decay

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☐ Plant Wood treating specifications

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PENTA* treatment for new wood structures pays you two-fold benefits—in longer wood life and *clean* protection.

PENTA gives positive protection against decay and termites—longer life for platforms, loading docks and car lumber. Added years of service life in all your wood construction bring big savings in repair and replacement costs.

The added benefit in PENTA is its *clean* treatment that leaves wood pleasing in appearance and easy to walk on.

Wood, always a preferred building material, is made even better with *PENTAchlorophenol treatment. For more information, write to THE DOW CHEMICAL COMPANY, Midland, Michigan.

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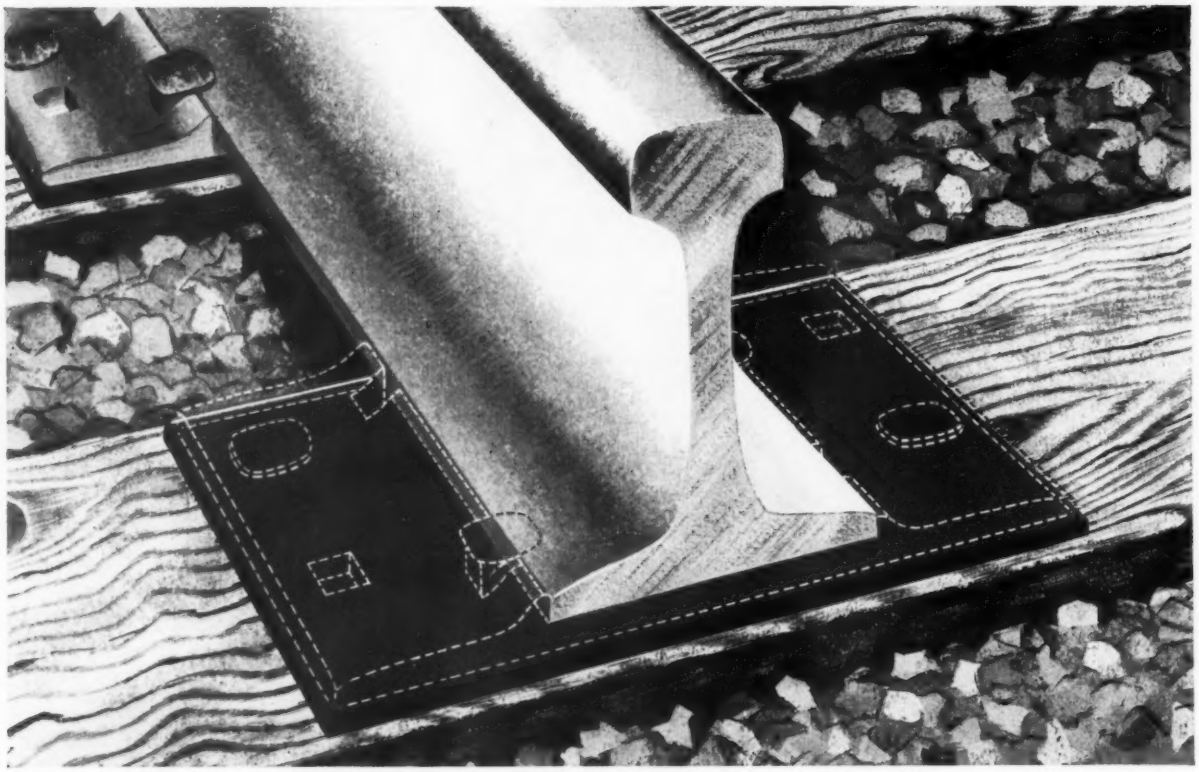
How to keep ties from dying young in trouble spots



Prevent cutting and abrasion by cushioning track structures with Johns-Manville Tie Pads

Johns-Manville Tie Pads provide benefits that warrant consideration in every track program. Designed to prolong tie service life, these Pads reduce "pumping," help track spikes stay tight longer, postpone maintenance expense for regauging and respiking.

J-M Pads absorb impact shock, help isolate the transmission of noise and vibration. Resilient, they serve as durable protective cushions, seal out dirt and moisture, prevent abrasion and cutting.

Formulated for low compressibility, high recovery and low plastic flow, J-M Tie Pads offer good resiliency and flexibility over the widest temperature ranges encountered in service. They are resistant to creosote, diesel and lubricating oils, brine, water and freezing and thawing.

Available in all standard sizes, J-M Tie Pads are furnished plain, or with a special coating on one side. For detailed information on Tie Pads or other Johns-Manville products, get in touch with your J-M Representative, or write Johns-Manville, Box 60, New York 16, N. Y.

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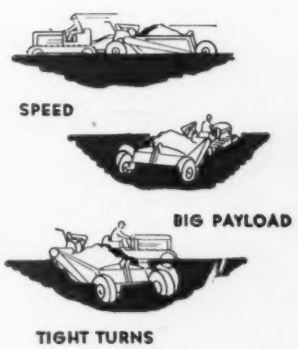
Built for railroad people By railroad people

Greenville Steel Car Company knows the importance of moving maintenance equipment quickly and economically "off" the tracks. Rugged, fast ATECO scrapers, built by Greenville, move that way. They keep the line open. Initial cost is low.

ATECO's "Boiling Bowl" action fills every corner of the scraper and then piles dirt high in the center to give you a maximum payload on every trip. You move more yardage faster with ATECO! You spread it faster with ATECO!

When you work in confined areas between roadbed and embankment, in the yard, or anywhere else, ATECO's ability to turn within its own length gives you full maneuverability and permits you to work precisely. Good balance permits high-speed operation.

When your division faces its next earth-moving problem, do it the ATECO way. Get set now by writing to us for full information. We know railroads and railroad problems. We'll help you select the best scraper for the job!



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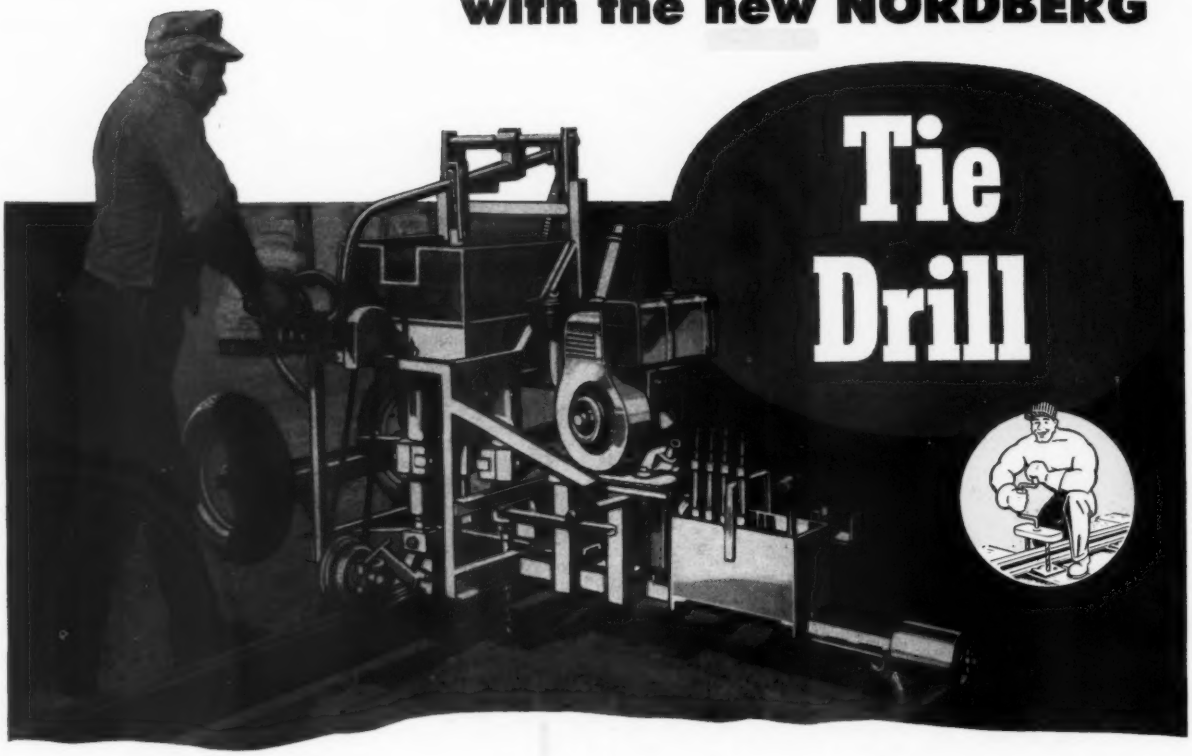
NOW...

save time and money DRILL TIES BEFORE SPIKING with the new NORDBERG



Advantages:

- *Field drilling costs can be cut about 75%*
- *Drills two holes at once, in less than 3 seconds per hole*
- *Operated entirely by one man*
- *Drills holes for rail holding or plate fastening spikes*
- *Always drills holes at right angles to tie*
- *Spikes have greater holding power . . . tie life is considerably extended*

THE new Nordberg Tie Drill is the maintenance machine you need for cutting tie drilling costs . . . and for increasing the useful life of your ties.

This accurate, versatile machine is the fastest tie drill on the market. It is operated entirely by one man, who can spot and drill 48 holes in the 24 ties of one rail length in just 2½ minutes . . . which is less than 3 seconds per drilled hole.

Can you afford to overlook savings like this? For further details about the Nordberg Tie Drill, write for Bulletin 199 .

*Copyright, Nordberg Mfg. Co

R553

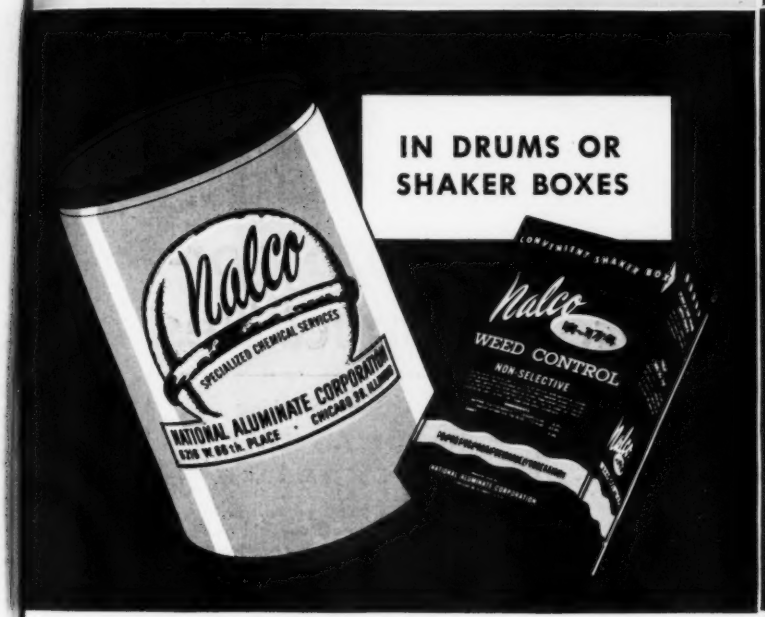
USE NORDBERG *"Mechanical Muscles"** TO DO A BETTER, FASTER MAINTENANCE JOB AT LOWER COST . . .

ADZING MACHINE • CRIBEX® • BALLASTEX® • SCREENEX® • SPIKE PULLER • TIE DRILL • GANDY—TIE PULLER AND INSERTER • POWER JACK • POWER WRENCH • RAIL DRILL • RAIL GRINDERS • TRACK SHIFTER • DSL YARD CLEANER • SPIKE HAMMER
DUN-RITE GAGING MACHINE

NORDBERG MFG. CO., *Milwaukee, Wis.*

NORDBERG MACHINERY

Formula for Fast, Full-Season Weed Control:



Nalco + Nalco MECHANICAL SPREADERS

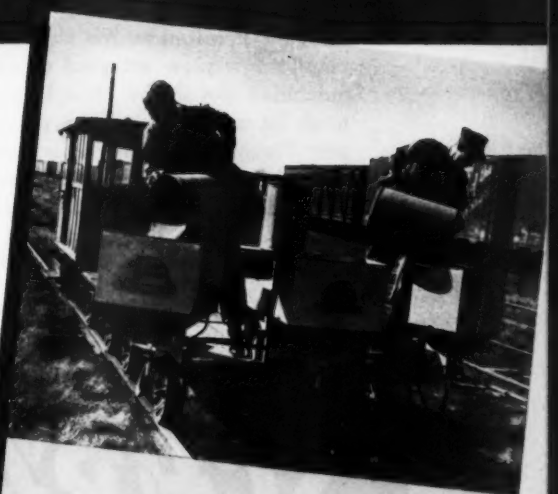
Nalco H-174 granular Weed Control Chemical, distributed with Nalco Track Mechanical Spreaders, is the fast, positive way to get full-season weed control in yards, along sidings and right-of-way. Around buildings, bridge and trestle footings and in other hard-to-reach places, the portable or off-track Mechanical Spreaders or the convenient Nalco H-174 Shaker Box do the job quickly, without waste.

Nalco H-174 action is powerful and lasting. One treatment, preferably before emergence, provides sufficient treatment to prevent growth during the season. Application after emergence provides a thorough kill and stays in the soil for months to prevent regrowth. H-174 is non-hazardous to humans and animals; safe to store and handle.

Your weed control requirement will determine the type of Nalco Mechanical Spreader best suited to your use. Whether manually-operated sling-type, mechanically-driven push-cart, or push-car-mounted, these spreaders are designed to give you accurate dosage control and excellent distribution of Nalco H-174.

Full data and prices on Nalco Weed Control Chemicals and Spreaders will be sent promptly upon request. Act now for a successful start on a one-treatment, all-season weed control program.

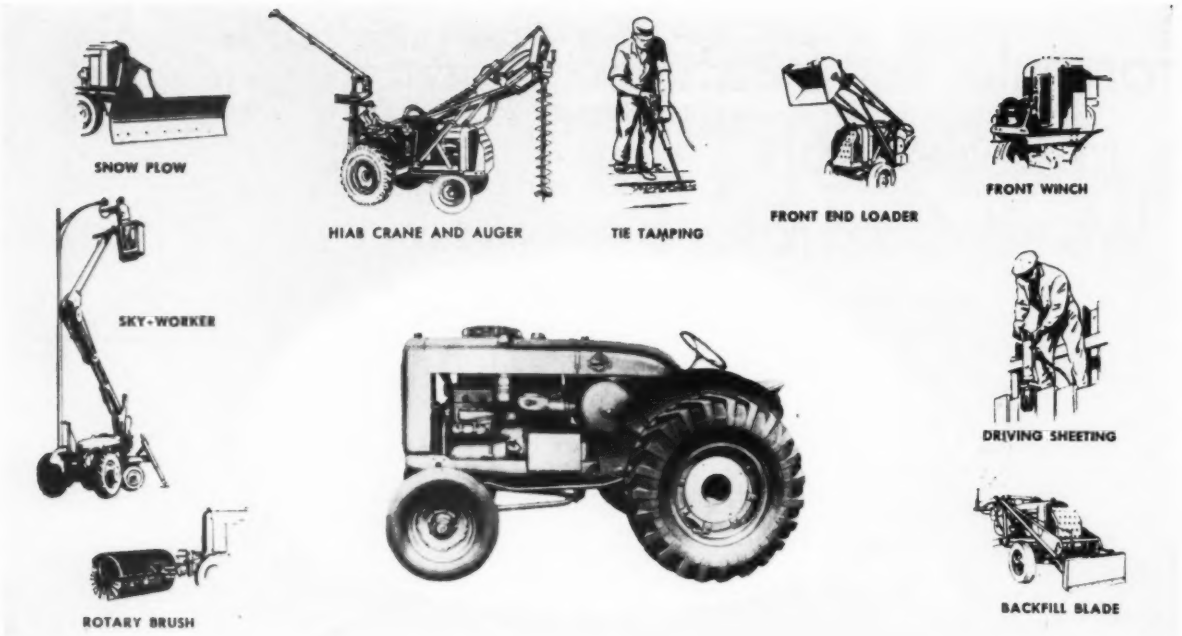
NATIONAL ALUMINATE CORPORATION
6196 West 66th Place • Chicago 38, Illinois
In Canada: Alchem Limited, Burlington, Ontario



FREE-FLOWING Nalco H-174 will not pack or clog in drums, boxes or spreaders. Uniformly-sized granules assure even distribution, eliminate dust nuisance and waste.

Nalco

PRODUCTS . . . Serving the Railroads through Practical Applied Science



Your *Pneumatractor* Air Compressor- BASIC UNIT of *many cost-saving machines*

Start with this 105-foot compressor-tractor that feeds up to eight tie tampers or spike drivers. Its easy off-track mobility fits it for other air jobs too—sheet pile driving, rock drilling and spray painting, to name only a few. And, of course, it's a tractor that will "get its back into" any pushing or hauling job.

Even if you stopped there, you would be getting big value for your investment, but suppose you occasionally need a small snow plow for yard or station areas? Buy a special machine? Not if you already own a Pneumatractor! Simply hook on a Schramm snow plow attachment and you're all set. There are many other useful auxiliary attachments available, such as the ingenious Sky-Worker that gives a workman a safe, adjustable platform for those high jobs. No wonder one large railroad, starting a few years ago with one versatile Pneumatractor, now owns over 100!

Get all the details about the cost-saving Pneumatractor and its many attachments by writing today for Catalog 5340, Schramm, Inc., West Chester, Pennsylvania.

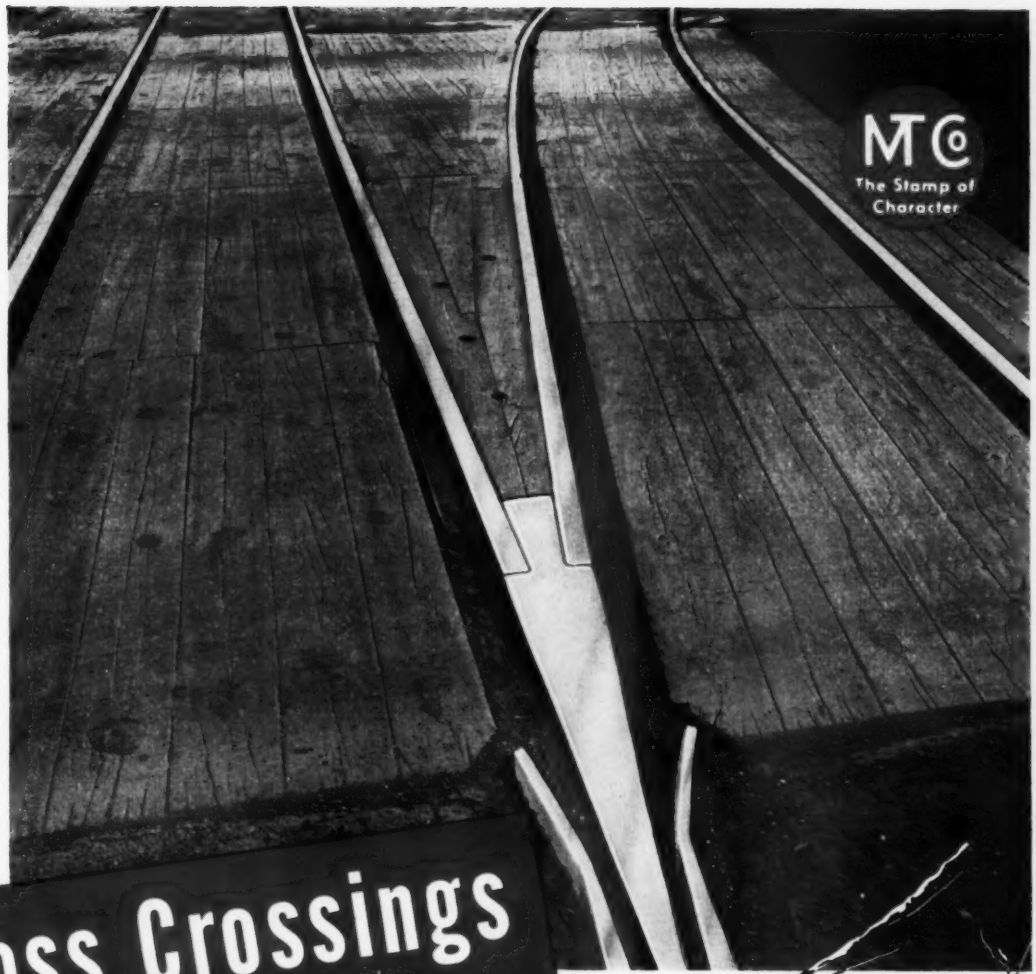
Yours for the asking

HANDY AIR TOOL CALCULATOR

One side of this plastic pocket-size calculator shows you how many air tools of any kind—tampers, drivers, breakers, etc. can be efficiently operated by any capacity compressor. Other side gives consumption of various air shop tools and formula for figuring correct compressor capacity to take care of them. Information good for any make compressor. When writing for one, ask for Schramm's Catalog 5350, describing the complete line of Schramm air tools ranging from tampers and breakers to impact wrenches and chain saws.

SCHRAMM AIR COMPRESSORS

A SIZE AND MODEL FOR EVERY AIR NEED



Moss Crossings

win you handshakes . . . *rather than headaches!*

- Smooth, tightly-locked surface wins public applause.
- Interlocking grain of black gum, toughest of hardwoods, ruggedly resists battering wear and tear.
- Maintenance cut to a minimum through longer service, less patching and track tie-up.
- Highest quality pressure-creosoted timbers render exceptionally long life, safe service.
- Bolt-locked panel construction, quick and economical to install and easy to remove for track work.
- Tailored to fit any angle or curve.

Specify Moss Crossings of Pressure-Creosoted Black Gum. They stand the test of time.

MTCo The Stamp of Character

T. J. MOSS TIE COMPANY

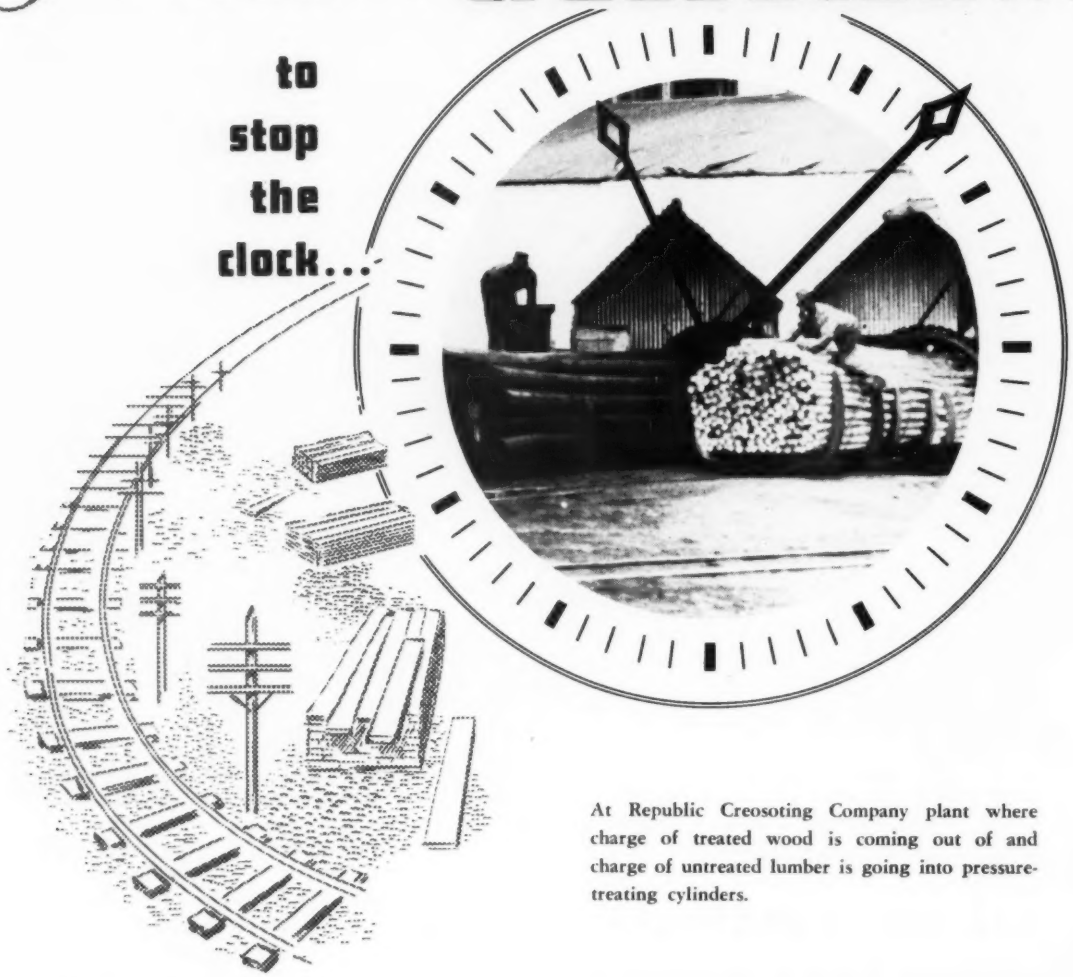
700 SECURITY BUILDING • ST. LOUIS 2, MISSOURI

CROSS TIES • SWITCH TIES • POLES AND POSTS • PILING • CROSSINGS

WOOD PRESERVING PLANTS: E. St. Louis, Ill.—Granville, Wis.—Shreveport, La.—Columbus, Miss.

Pressure Creosoted...

to stop the clock...



At Republic Creosoting Company plant where charge of treated wood is coming out of and charge of untreated lumber is going into pressure-treating cylinders.

Republic Creosoted
Railroad Ties
Timbers
Lumber
Wood Blocks
Cross Arms
Pilings
Poles
Posts

Every time you use Republic Creosoted Wood it's like stopping the clock for you can count on remarkable increase in longevity of service.

Even with the constant impact of more than 25 years of heavy rail traffic, many road beds still have the *original creosoted* cross ties in service . . . this is but one example of the proved effectiveness of Republic Creosoted Wood Products.

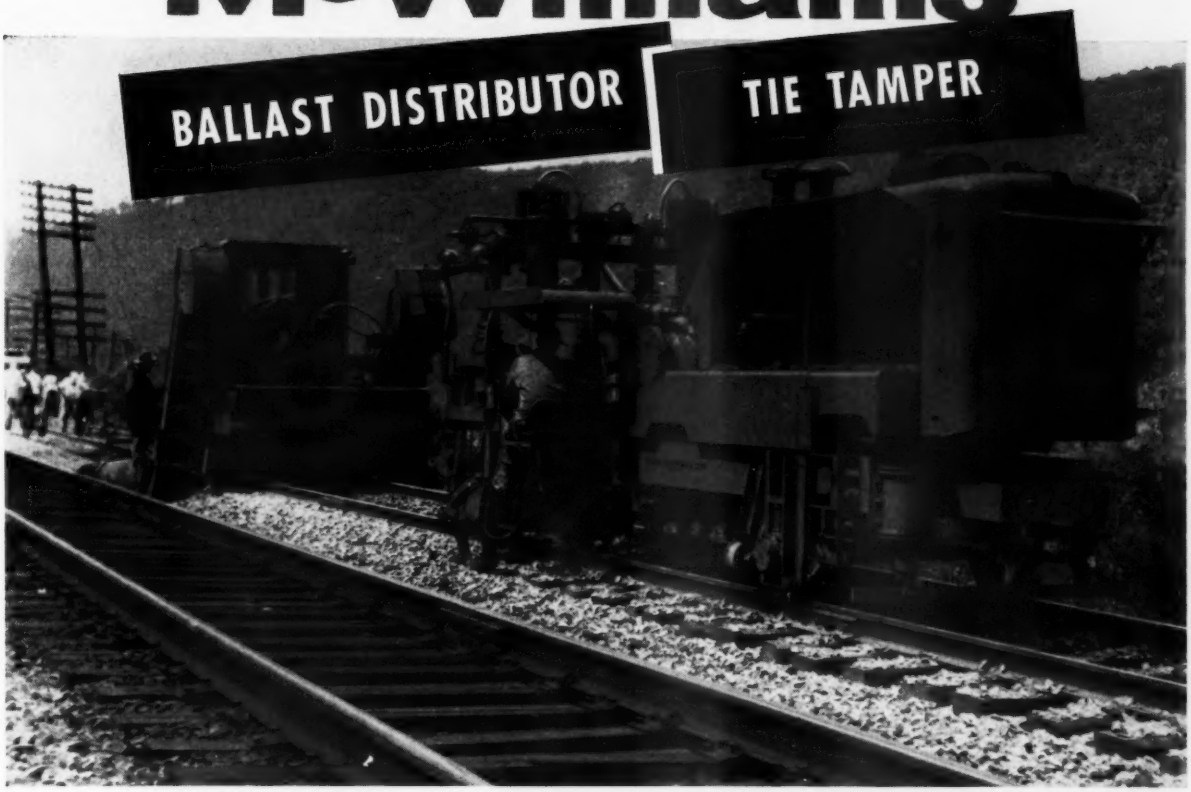
It is good business to rely on Republic Pressure Creosoted Wood, backed by a record of over 50 years in service.

Republic CREOSOTED PRODUCTS

REPUBLIC CREOSOTING COMPANY
MERCHANTS BANK BUILDING, INDIANAPOLIS, INDIANA

For additional information, use coupon, page 122

McWilliams



This Team Makes the Best Track

. . . at the lowest cost

These two machines assure the best surfaced track . . . at a cost lower than that of all other mechanical and hand methods. The McWilliams Ballast Distributor saves from 30 to 40 men by eliminating all hand forking. It picks up ballast from inter-track and shoulder spaces and places it in the proper quantity exactly where it is needed for tamping. Its companion machine, the McWilliams Tie Tamper, now features a new 600 foot compressor which has made possible a 40% increase in tamping speed.

McWILLIAMS BALLAST DISTRIBUTOR
Tie renewal is made without interference from ballast distributed in the track ahead of the gang.

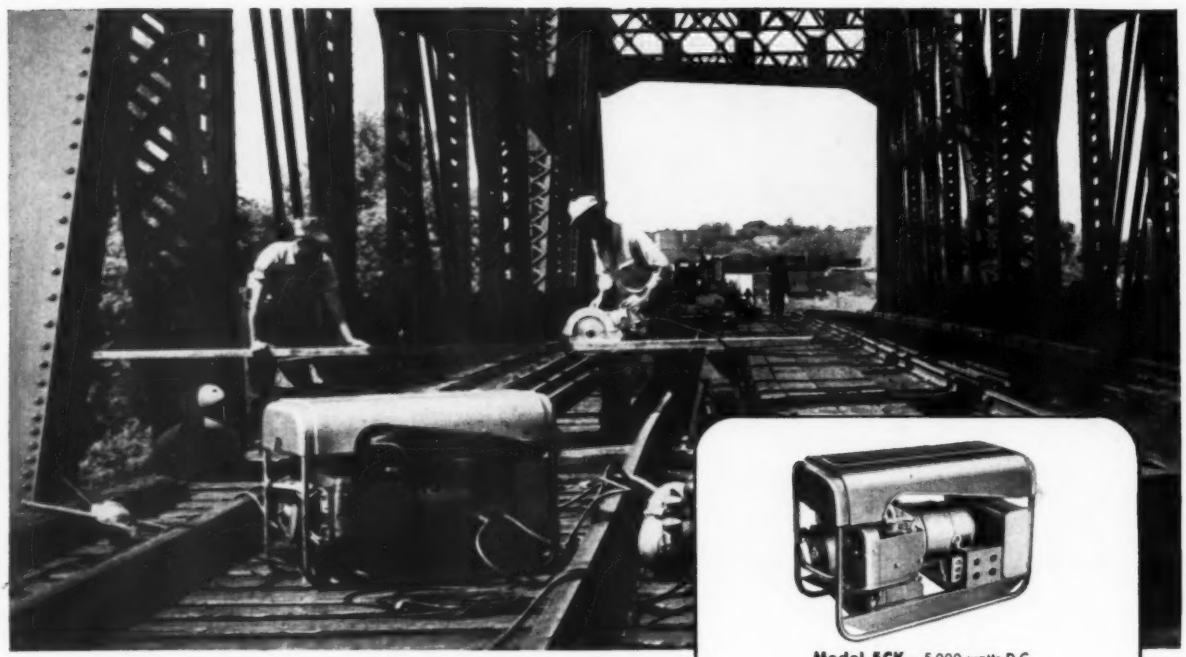
McWILLIAMS TIE TAMPER
Using the least labor, it operates at from 575 to 625 feet per hour of perfectly tamped track.

Railway Maintenance Corporation

PITTSBURGH 30, PA.

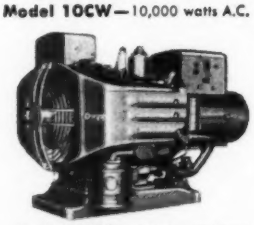
Designers and Manufacturers of: McWILLIAMS MOLE AND SUPER MOLE . . . McWILLIAMS TIE TAMPER, CRIB CLEANER AND BALLAST DISTRIBUTOR . . . R. M. C. TIE REPLACER

There's an ONAN Electric Plant for any railroad job!

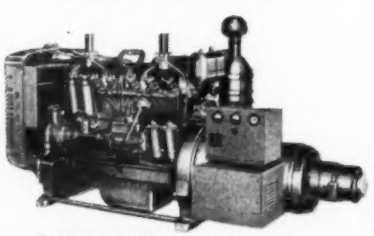


Model 5CK—5,000 watts D.C.

Model 10CW—10,000 watts A.C.



Model 5DRP—5,000-watt Diesel



Model 55DAY—55,00-watt Diesel

ONAN builds more models, more sizes ...both gasoline and Diesel powered

The full range of models in the Onan line makes it easy for you to pick the right electric plant for any railroad job. Where high capacity with light weight and compactness is essential, the Onan air-cooled CK and CW series give you outstanding advantages. The Onan 10CW, for instance, delivers 10,000 watts *with half the weight and in half the space* of competitive units of equal capacity.

Where operating economy with portability is an important consideration, Onan air-cooled Diesel-powered electric plants—the 3,000-watt Model 3DSP and the 5,000-watt Model 5DRP, are your choice.

On large jobs where a continuous supply of electricity is required, Onan water-cooled gasoline and Diesel electric plants deliver up to 55,000 watts day-in and day-out.

Look into the worthwhile labor savings that can be made by using electric tools powered by Onan electric plants, *on all construction and repair jobs*. You can get the work done *electrically*, faster and at less cost.

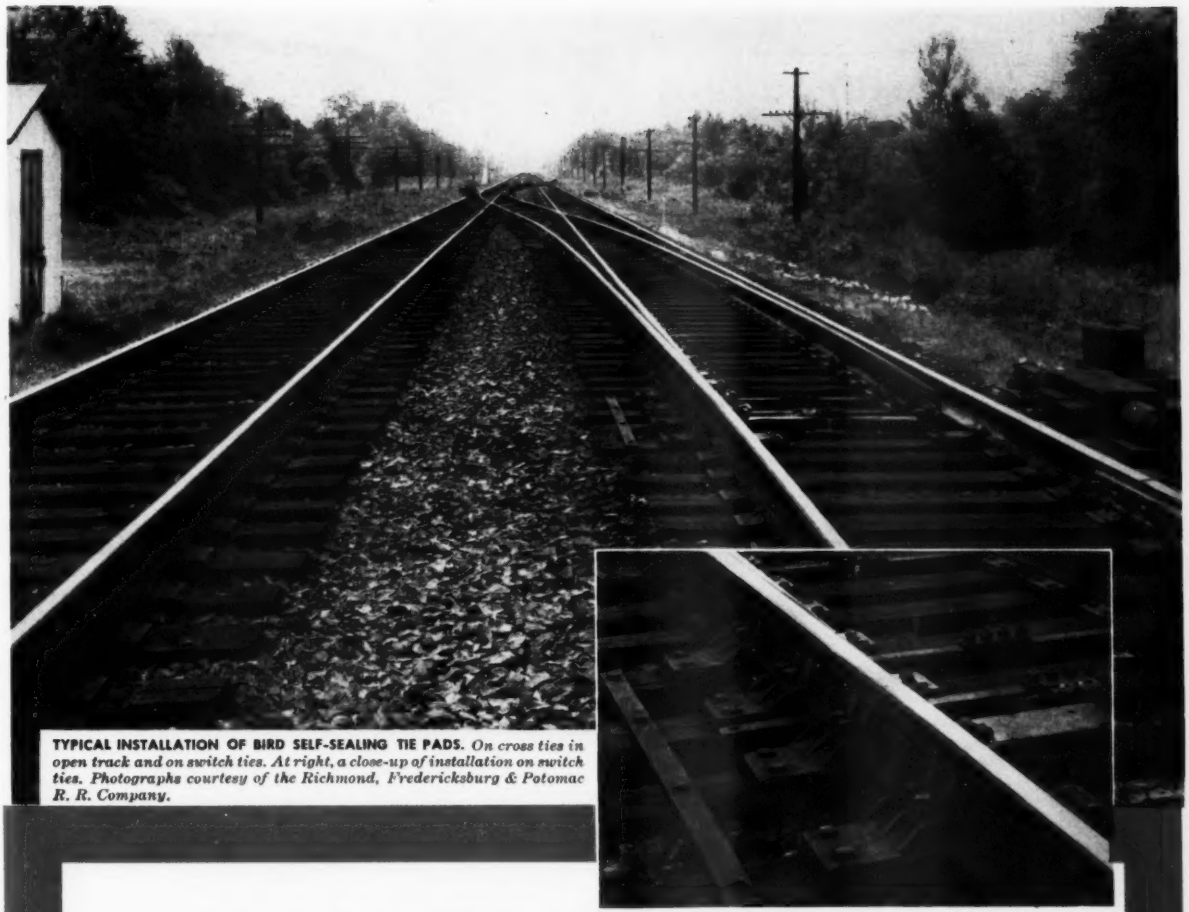
Write for specifications

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

8810 University Ave. S. E. • Minneapolis 14, Minnesota

For additional information, use coupon, page 122



TYPICAL INSTALLATION OF BIRD SELF-SEALING TIE PADS. *On cross ties in open track and on switch ties. At right, a close-up of installation on switch ties. Photographs courtesy of the Richmond, Fredericksburg & Potomac R. R. Company.*

Slash your tie costs 50% with BIRD Self-Sealing TIE PADS

HOW? BIRD Self-Sealing Tie Pads form a waterproof, dustproof seal on the tie that protects the vulnerable area under the plates and around the spikes. Mechanical wear and plate penetration are eliminated.

YOU GET 50% more tie life from new ties.

YOU GET twice the normal remaining life expectancy from old ties that can be adzed to a smooth surface of sound wood.

YOU SAVE on gauge, line, and surface costs in addition to savings on tie life.

BIRD PROVEN BEST! The original self-sealing tie pad – proven by years of in-track experience.

WHERE?

1. Under the joint and shoulder ties of insulated joints.
2. On new or older bridge decks.
3. On switch timbers.
4. Under crossing frogs.
5. Through highway grade crossings and station platforms.
6. On curves to insure holding track to gauge and surface.
7. With smaller tie plates.

WHEN? Start now. Write today to BIRD Tie Pads, Dept. HTS-3, East Walpole, Mass.

BUY THE BEST **BIRD & SON, inc.** Established 1795 ***BUY BIRD***

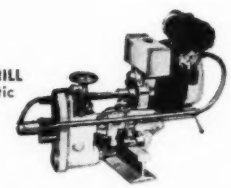
You too, can reduce track maintenance costs with RACINE PORTABLE TRACK TOOLS

Features that make it easy for you to choose a RACINE portable Rail Saw

- **LABOR SAVING** — One man operation, does the work of several hands. Easily moved by two men — no traffic interference.
- **EFFICIENT** — In or out of track, a Racine Saw cuts fast, smooth and accurate. Cut-off any length down to one-tenth of an inch.
- **MATERIAL SAVINGS** — Shattered and burned rail ends, failures from fractures caused by "nick and break" or torch methods of cropping are substantially reduced.

RACINE UNIT TIE TAMPER
Lightweight — Shock-Free Operation

RACINE PORTABLE RAIL DRILL
Lightweight — Automatic Power Feed

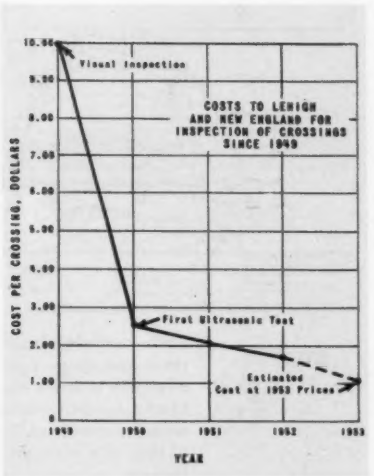


WRITE FOR NEW CATALOG showing Racine's complete line of Rail Tools. Address RACINE HYDRAULICS & MACHINERY, INC., 2038 Albert St., Racine, Wis.

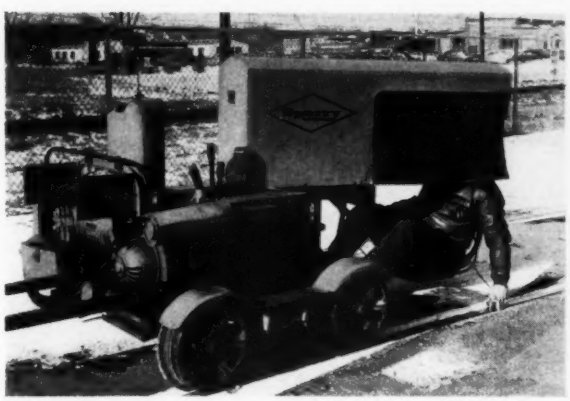
RACINE

Rail Joint Testing Costs Cut 80% for L & NE by Sperry Ultrasonic Detection Method

Mr. H. E. Jones, Engineer, Maintenance of Way for the Lehigh and New England reports, "We have long been interested in rail testing and have employed Sperry's induction method since 1931, first at three, then two and more recently, with increased traffic, at one year intervals. Our first use of the ultrasonic test car was in 1950 and the results shown here speak for themselves."



"Here is a graphic picture of the cost savings attained through the Sperry Ultrasonic Detector Car testing of crossings compared with our former visual inspection costs." Mr. Jones further advises, ". . . this same efficient performance applies to various other types of track structure—frogs, joints, at platforms, at heels of switches—without any need for disassembly."



Most advanced method for detection of rail and defects within joint bar limits is with the Sperry Ultrasonic Detector Car shown here. Thoroughly trained and experienced Sperry operators have succeeded in bringing costs to the amazingly low figure of less than 8½¢ per joint in 1953—based on an average of all railroads tested.

Two factors contributing materially to the economy and high performance of Sperry Rail Testing are the continuing research conducted to improve on present methods and equipment and the exhaustive maintenance program to keep all Sperry equipment at top operating efficiency. Above is section of large maintenance shops at Danbury.

No disassembly or labor for uncovering concealed rail joints is required to locate dangerous defects in the joint bar area when the ultrasonic method is used. Head and web separations and bolt hole cracks are located accurately and instantaneously.

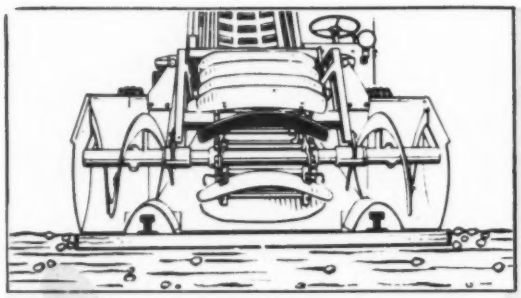
FIRST IN RAIL TESTING

SPERRY RAIL SERVICE

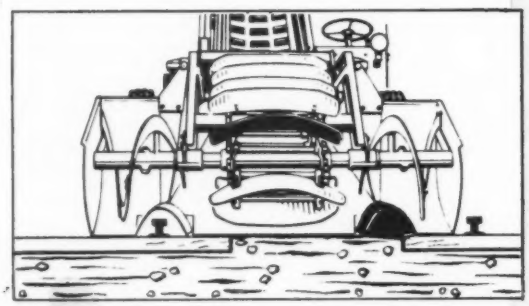
Division of Sperry Products, Inc.

Danbury, Conn.

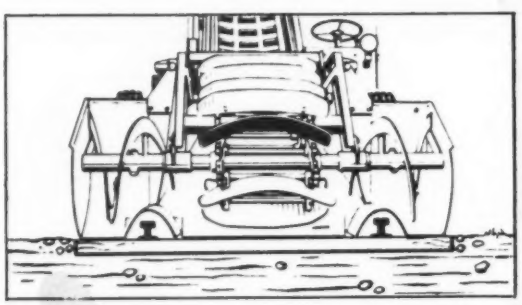
New York Chicago St. Louis



STEP 1. Both tunnels straddle rails on track one. Augers move material over the tunnels as the paddle-blade feeder pushes material onto the conveyor. The full length of the tie is cleaned in one pass. Flanged wheels keep front end aligned and adjust moldboard to rail size.



STEP 2. With one tunnel straddling the rail of track one and with the other tunnel covered, the inter-track area is cleaned. Extra wide tread keeps wheel from rubbing rail, eliminating inside tire wear during all steps of track cleaning. Swivel conveyor swings 55° to either side or to the rear.



STEP 3. On track two, both tunnels again straddle the rails. The HiLoader is equipped with the exclusive Athey full-floating feeder. Material does not pile-up ahead of the cutting edge.

THE ATHEY HiLoader TRACK CLEANER IS DESIGNED TO RAILROAD STANDARDS

Track cleaning has become a standard procedure in busy railroad yards. Progressive railroad men know that they cannot afford the time-consuming delays of derailments, the danger to operating personnel and poor drainage that results from dirty yards. When spillage and other debris start to build up between tracks, the best tool for picking up and loading it into hopper or gondola cars is the Athey Track Cleaner.

The Athey Track Cleaner was designed and built specifically for railroad use. The front moldboard is of a width to allow the machine to clean rails on 12, 13 or 14-ft. centers. The wheels are spaced wide enough so the Track Cleaner straddles the rails without causing wear on the inside tire sidewalls. The tunnels are deep enough to work over 133 lb. rails. Higher strength materials have been used to withstand the tougher handling of railroad operations.

The Athey HiLoader Track Cleaner will be working long after other cleaners have been scrapped.

With all of this quality built into the Athey Track Cleaner, railroad men know that they can count on it to cut their track cleaning costs to a fraction of what they formerly paid when using other track cleaners, shovels or hand labor. They like the way the Athey Track Cleaner is rubber-mounted for off-track operation, permitting tracks to be cleared in seconds, so as not to interrupt railroad schedules. The Track Cleaner can also travel from one part of the yard to another at 20 MPH.

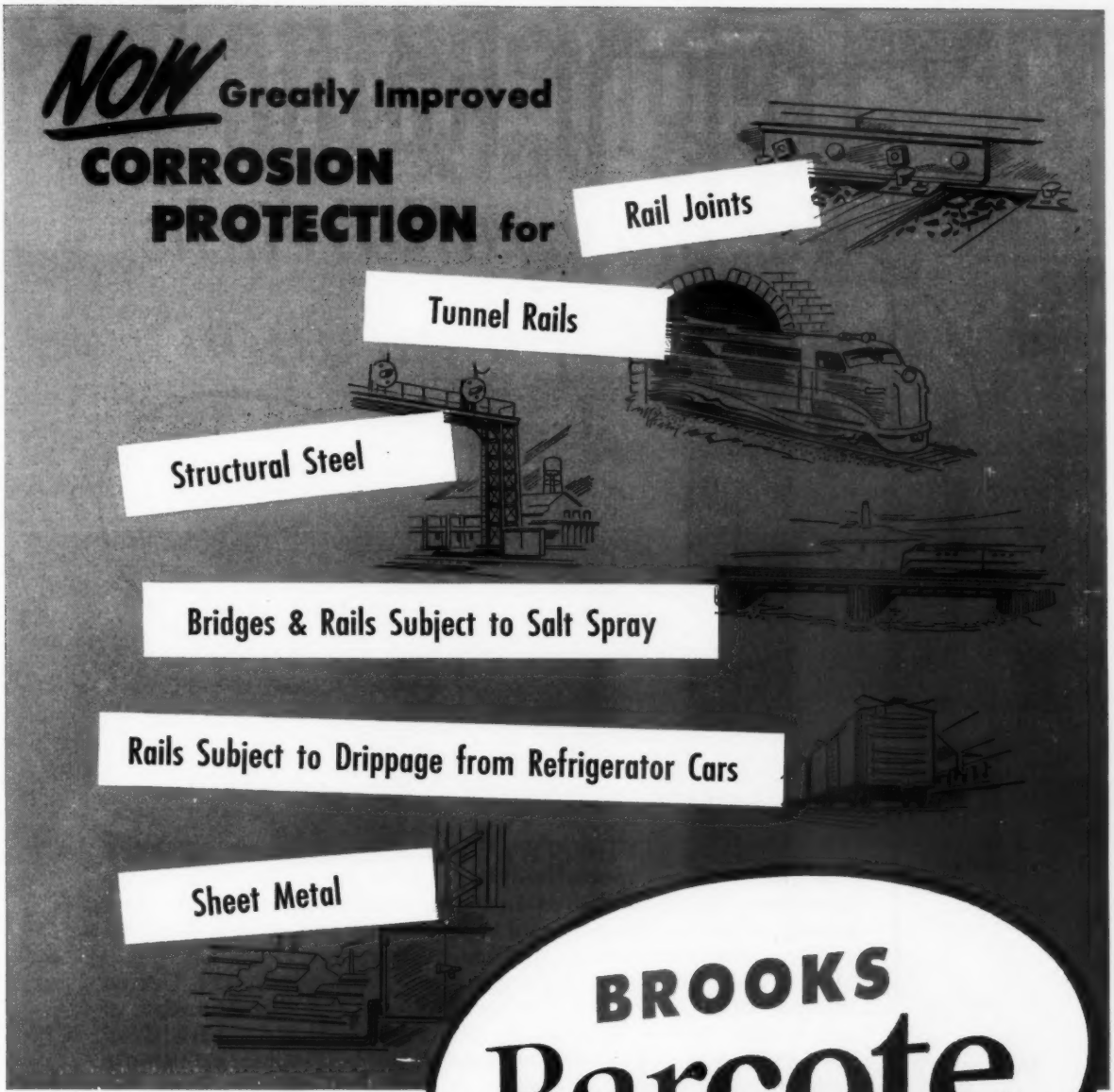
Another exclusive feature of the Athey Track Cleaner which owners praise is the way it can load any car available. The 18-foot swivel conveyor of the Track Cleaner will reach into highest hopper cars and can be swung 55° to either side of track it is cleaning to simplify operations.

The Athey HiLoader Track Cleaner is not an expensive single-purpose tool, either. By the simple procedure of removing the tunnels, the Track Cleaner can be converted into a stockpile loader that will load trucks and cars at a rate up to 10 cu. yds. per minute. The high capacity of the Track Cleaner makes it ideal, also, for clearing snow from rails or from roadways and lots.

These are some of the reasons an Athey Track Cleaner can cut your track cleaning and maintenance costs . . . there are more. Your Athey-Caterpillar Dealer can give you more features, as well as facts and figures, on the cost-cutting ability of the HiLoader Track Cleaner. Call him or write direct for complete details to—

Athey PRODUCTS CORPORATION

5631 West 65th Street
Chicago 38, Illinois



BROOKS
Barcote

Brooks Barcote, which sets to a semi-hard coating of pure lubricant, provides exceptional corrosion protection in all the applications indicated. This new leaded-petroleum compound produces a film which expands and contracts without flaking, cracking, pulling away or blistering. Barcote resists the action of salt water, is soluble in petroleum solvents and never clogs spray equipment.

Write for Brooks Pamphlet 61.

- Low cost, with long service
- Flows at 0° F
- Has penetrating action sufficient to carry it behind scale and through rust

THE BROOKS OIL CO.

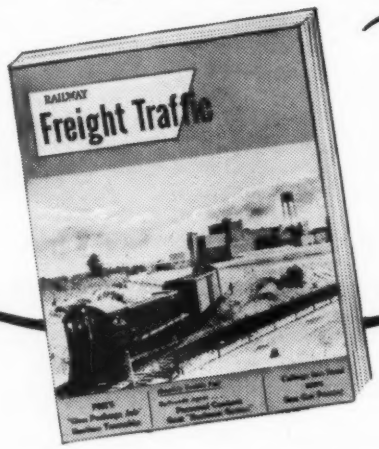
Since 1876

Executive Offices and Plant, Cleveland, Ohio
Executive Sales Offices, Pittsburgh, Pa.
Canadian Offices and Plant, Hamilton, Ontario
Cuban Office, Santiago de Cuba

Warehouses in Principal Industrial Cities

RAILWAY **Freight Traffic**

the only rail-freight shipper publication



RAILWAY FREIGHT TRAFFIC is the only monthly publication geared to the specialized interests of users of freight transportation. It is published to foster the interchange of ideas among railroads, shippers and suppliers . . . and to help shippers utilize railway service to their best advantage.

It is distributed to leading shippers throughout the United States and Canada, to keep them abreast of new developments in rail freight service. During its first year RAILWAY FREIGHT TRAFFIC has registered an outstandingly favorable response among these shippers of freight.

Through this specialized distribution to over 5200 leading shippers, and to important top level and traffic men on railways, RAILWAY FREIGHT TRAFFIC enables advertisers—railroads and manufacturers alike—to gear their sales messages to those key persons who are responsible for routing America's freight and for recommending the use of related products and services.

RAILWAY FREIGHT TRAFFIC provides a medium in which individual railroads are able to advertise their freight services as a basic part of an over-all merchandising program concentrated on *ship-by-rail* promotion.

RAILWAY **Freight Traffic**

A SIMMONS-BOARDMAN PUBLICATION

New York 7 · 30 Church St · Chicago 3 · 79 W. Monroe St · Cleveland 13 · Terminal Tower

Shaves time from every working cycle

Le Roi Transo TLF-150 Front-end Loader

YOU move more material—faster—at lower cost — with this Le Roi Transo 1½-yard Front-End Loader. It saves you money every minute it's working — and here's why:

You load faster — because . . .
Patented "bucket-rocking action" helps you get a full bucket load within seconds, without tire-spin or undue strain on the loader.

You travel faster — because . . .
Four-wheel drive and low center of gravity provide powerful traction. Torque converter transmits power fast and efficiently. You get in and out in a hurry — in sand, mud, snow, or rocky terrain. Planetary-type reversing transmission cuts reversing time 95%.

You can maneuver the TLF-150 easier and in less space, thanks to power steering, short (84") wheelbase, short over-all length, and small turning radius. Low carrying position of bucket gives operator especially good vision and provides an extra margin of safety.

You dump faster — because . . .
14-foot maximum dumping height and 3-foot reach let you spot loads quickly with pin-point accuracy over high truck tail-gates, bins, hoppers.

Now, don't just take our word for all this. See a Le Roi Transo TLF-150 in action, see how it makes shorter work of your material-handling jobs—how it cuts time and costs. Have your nearby Le Roi distributor arrange a demonstration.

Write for latest bulletin.

TD-12

TRANSO DIVISION LE ROI

LE ROI COMPANY

A Subsidiary of Westinghouse Air Brake Co.
TRANSO DIVISION
MILWAUKEE 14, WISCONSIN

Plants: Milwaukee • Cleveland — Greenwich — Dunkirk, Ohio • Coldwater, Michigan

Complete

BRUSH and WEED KILLING SERVICE

PIONEER in the improved right-of-way brush control

Spraying equipment specifically designed and proven for the purpose

LEADER in effective grass and weed killing control

- TCA
- OILS
- 2, 4-D
- PENTACHLOROPHENOL
- BRUSH KILLERS

For Your Railroad . . .

- PROVEN CHEMICALS
- TRAINED PERSONNEL
- SPECIALIZED EQUIPMENT
- RECOGNIZED EXPERIENCE
- INSURED RESPONSIBILITY

Introducing . . .

- **DALAPON**

A new systemic grass killer actively translocated throughout the plant system by absorption through either the foliage or root structure.

Spray Services *Incorporated*

Pioneers in Right-of-Way Spraying

P. O. BOX 5444 HUNTINGTON, W. VA.

The VERONA Fixed Tension TRIFLEX SPRING has the highest reactive value of any track washer on the market . . . fits head-free or head contact point bars . . . smooth, contact area between nut and spring.
Wider distribution of bolt stress to angle bar. Spring will not turn with the nut.
Provides the means for applying equal tension to all bolts.
Less wrenching to install. Less wrenching to maintain.

WHAT IS THE PROPER FUNCTION OF A TRACK WASHER?

. . . to maintain the *highest bolt tension over the longest period of time* without retightening. The VERONA *Fixed Tension* TRIFLEX SPRING exceeds the A.R.E.A. specifications by 100%! It has the *highest* reactive value of any track washer on the market, *plus* the means for providing uniform bolt tension.

Woodings Verona

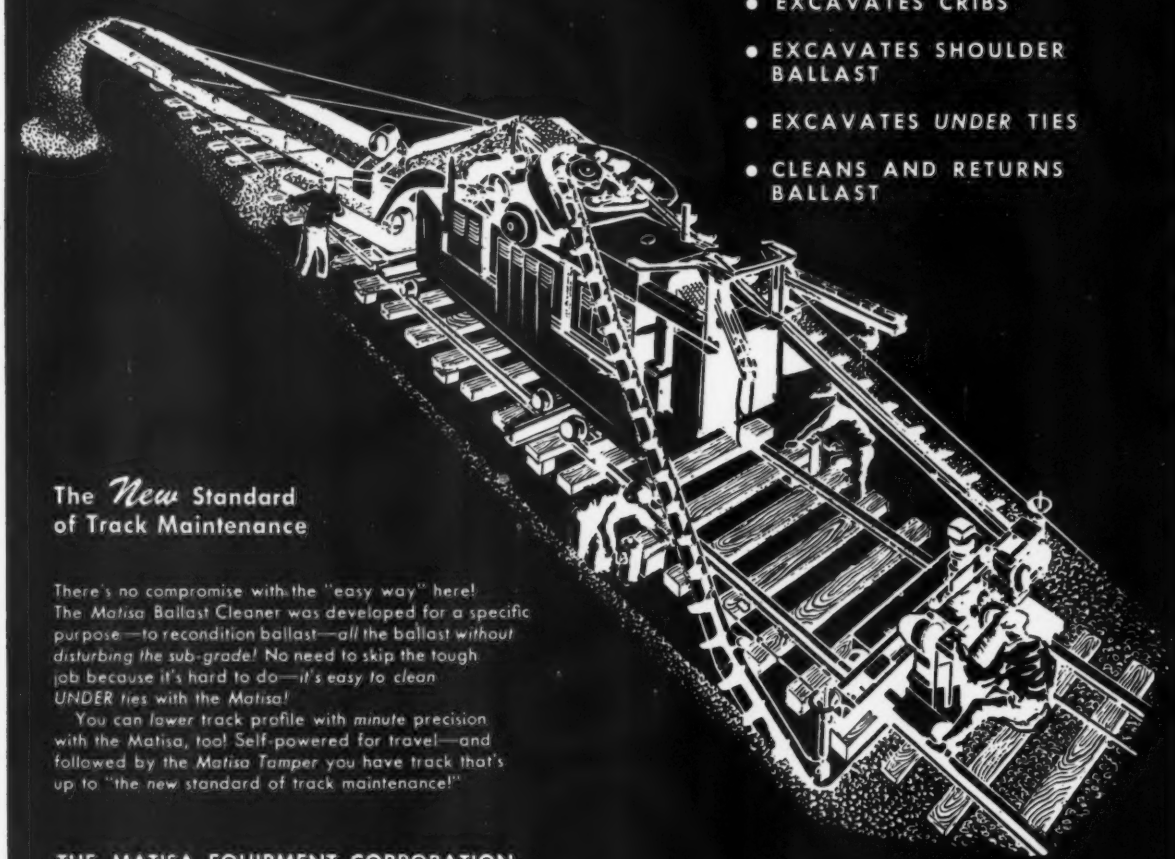
TOOL WORKS

VERONA, PA. • CHICAGO, ILL.

ONE Matisa DOES ALL FOUR

in ONE operation!

- EXCAVATES CRIBS
- EXCAVATES SHOULDER BALLAST
- EXCAVATES *UNDER* TIES
- CLEANS AND RETURNS BALLAST



The *New* Standard of Track Maintenance

There's no compromise with the "easy way" here! The *Matisa* Ballast Cleaner was developed for a specific purpose—to recondition ballast—*all* the ballast *without disturbing the sub-grade!* No need to skip the tough job because it's hard to do—*it's easy to clean UNDER ties with the Matisa!*

You can *lower* track profile with *minute* precision with the Matisa, too! Self-powered for travel—and followed by the *Matisa Tamper* you have track that's up to "the *new* standard of track maintenance!"

THE MATISA EQUIPMENT CORPORATION
224 South Michigan Blvd. • Chicago 4, Illinois

TRACKWORK SPECIALISTS ALL OVER THE WORLD

Matisa

NEWS NOTES...

...a resumé of current events throughout the railroad world

MARCH, 1954

Robert R. Young's bid for control of the NYC has been rejected by the Central's board of directors. Both Young and William White, president of the road, are predicting a last ditch proxy battle between the opposing factions at the Central's annual meeting, May 26.

•

The NYC is actively considering plans for "piggy-back" operations. The program being considered would include movement in solid trains on fast nightly schedules, specially built 75-ft. cars, side-loading of trailers, special terminals with depressed tracks for side loading, and the use of hydraulic lift trucks for loading and unloading the trailers on cars.

•

A permanent injunction has been issued prohibiting the Santa Fe and sixteen non-operating unions from entering into a union shop contract. The decision was rendered after a three-week jury trial in the 108th district court, Potter county, Amarillo, Tex. Judge E. C. Nelson held in rendering his decision that compulsory unionism is "repugnant to the idea of human worth and to man's freedom of choice" and that the "amended Railway Labor Act violates the 1st, 5th, 9th and 10th amendments to the constitution and exceeds the power of congress to legislate interstate commerce."

•

The Post Office Department has proposed that its "experiment" in the handling of three-cent, first-class mail by air be extended to three additional routes between New York, Chicago and Washington, on the one hand, and Jacksonville, Fla., Tampa and Miami, on the other. The purpose is to obtain experience in addition to that gained from the segments now in operation between New York and Chicago and Washington and Chicago.

•

A plan to establish a railway mail transportation division within the Association of American Railroads has been approved by the AAR board of directors. Effective April 1, the new division will take over all activities of the Committee on Railway Mail Transportation except those dealing with rates.

•

The Santa Fe is now engaged in pressure welding 38.7 miles of 115-lb. rail at Topeka, Kan. Plans call for laying 23 miles of this welded rail between Eudora and Tecumseh, Kan., on the Eastern division, and the remainder on the Oklahoma division between Perry and Mulhall, Okla. Using the Oxweld process, the operation consists of welding 30 to 37 standard rail lengths into one, loading on flat cars, hauling to laying location, and unloading. Operations are on a double-shift basis in order to expedite the work and keep operating costs down, since the welding machine is leased on a monthly basis.

NEWS NOTES (continued)

The Northern Pacific will build a hump-retarder yard at Pasco, Wash., at a cost of $5 million. The project has been initiated because of an expected steady increase in traffic from the nearby million-acre Columbia Basin irrigation project and an already heavy interchange of cars destined to and from the Portland area and California points. The new yard is scheduled for completion early in 1955.

•

The Pennsylvania has ordered 10 McWilliams ballast distributors and the New York Central eight from the Railway Maintenance Corporation. This will bring the total number of units to 18 on the Pennsylvania and 14 on the Central.

•

Continuing their efforts to win back passenger traffic to the rails, the Union Pacific, the North Western and the Wabash have agreed to make the so-called family fares even more attractive by reducing fares for children between 5 and 12 to ¼ of the one-way fare. As a further concession to family convenience, the head of the household may return to the point of origin on any day of the week independent of his family. Under the original plan, the family had to travel together in both directions.

•

The New York Central has reduced roundtrip coach fares between Cleveland and Cincinnati from 3.3375 cents per mile to 2.25 cents a mile in an experiment which is an outgrowth of the NYC-B&O test of reduced fares between Cincinnati and Detroit.

•

Exploratory drilling by Union Pacific geologists has uncovered extensive iron ore deposits near the railroad's main line in Wyoming. Much of this ore is reported to be rich in titanium, a strategic metal. The UP owns or controls at least 60 per cent of the deposits and, in anticipation of their development, has surveyed a 30-mile spur line to reach them.

•

Diesel-electric locomotives handled 74 per cent of the gross ton-miles of freight service produced by Class 1 railroads during the first 10 months of 1953. This was an increase of 9.1 per cent over 1952.

•

"More than 1/3 of the entire fleet of 1-3/4 million freight cars in existence today has seen more than 25 years of service, and needs replacement," according to Gustav Metzman, chairman and president of the American Railway Car Institute. "Unless railroads are to surrender to competing forms of transportation, the ordering of new cars—at least consistent with retirements of old ones—is inevitable," declared Mr. Metzman.

•

ALSO WORTH NOTING—Steel making capacity of the U. S. was 124,330,410 net tons per year at the start of 1954 . . . Dial telephone service is now available between San Francisco and Sacramento on the Southern Pacific's own system . . . The state of Illinois has launched a drive to collect taxes on sales to railroads which, it is estimated, will yield between $10 and $12 million annually.

1931 23 CONSECUTIVE YEARS 1954
MODERN BALLAST CONDITIONING

BEFORE *"R.B.C.C." Service*

AFTER *"R.B.C.C." Service*

"R. B. C. C." ballast cleaning service has earned its outstanding performance record from 23 years of successful operation. Our 3 and 5 unit trains are entirely self contained on our own standard railroad equipment—No railroad cars are used or tied up.

"R.B.C.C." 5 unit equipment does a thorough ballast conditioning job, cleaning two center ditches or two shoulders or one of each at one trip.

"R.B.C.C." 3 unit equipment, self propelled, does a thorough ballast conditioning job, cleaning one shoulder at one pass on one side only.

"R.B.C.C." ballast cleaning or excavating service, complete with our own personnel and equipment, is handled on contract basis.

RAND TOWER
MINNEAPOLIS, MINN.

METROPOLITAN BANK BLDG.
WASHINGTON, D. C.

THE *KERSHAW* LINE

BEFORE

The Kershaw machines pictured here comprise The Kershaw Main Line for 1954 for use in track rehabilitation.

They're unique in that they're guaranteed to pay for themselves out of the savings they make in your track maintenance budget.

Or, to put it another way, they're guaranteed to perform more work for the same money spent on manual labor or other machines.

You can't make a better buy than a Kershaw machine.

But suppose your 1954 budget doesn't provide for the purchase of capital equipment for maintenance?

In that case, Kershaw Manufacturing Co. can save you thousands of dollars on its all purpose rental plan. For example:

1. You can rent a Kershaw Ballast Regulator Scarifier and Plow for six months at a cost of $1,000 a month. Or,

2. You can rent the same machine for 12 months at a cost of $500 a month. Or,

3. You can rent the Regulator for 36 months at a cost of $350 per month. Under this last plan, all rentals may be charged to operating expenses.

Now take a look at your own operations. Can you maintain 200 miles of Ballast Shoulder a year for only $4,200 plus gas, oil and the salaries of 2 operators?

In either plans 1 or 2, 90 per cent of all rentals may be applied to the purchase price.

But here's the clincher. Kershaw guarantees the machines will save you money. No savings, no rentals. It's as simple as that.

All of the Kershaw machines shown on these two pages can be rented for similar low costs as the Regulator. Total rentals on The Kershaw Line for all Four machines total only $1400 a month.

If not, better get in touch with Kershaw Manufacturing Co., Montgomery, Alabama. Kershaw guarantees to do it!

Here's how Kershaw Machines go about the business of reconditioning tracks. From left to right the diagram shows a Kershaw Ballast Regulator, and Scarifier plowing old ballast away from the end of ties. Next comes the Kershaw Track Crane distributing and placing ties for replacement followed by two men pulling spikes.

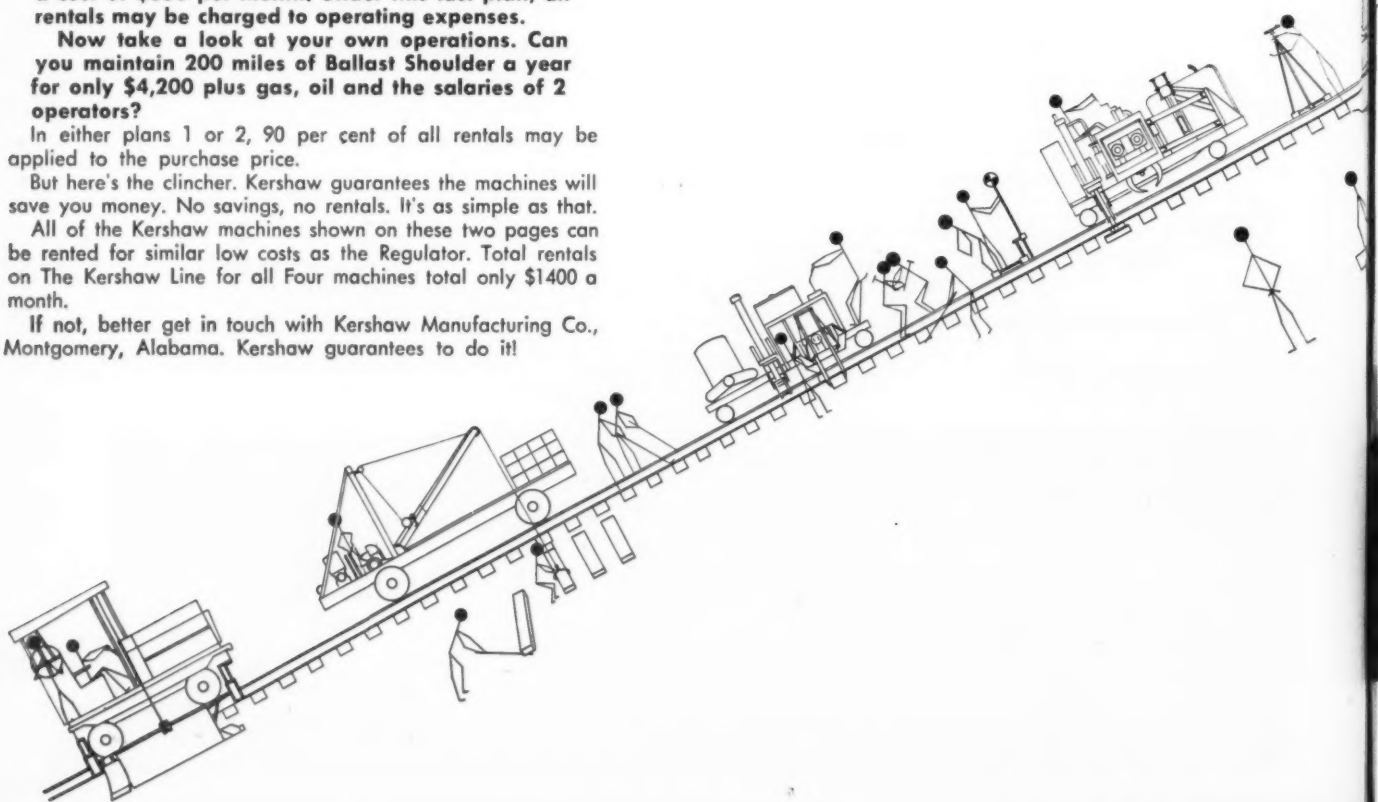
Then comes the Kershaw Tie Replacer pulling old ties and inserting new ones at the same operation. Three men follow to spike the new ties. Next operation is the Kershaw Jackall which spots track and tamps each tie head with the aid of two men and a spotboard.

New Ballast is now unloaded from hopper or ballast cars. By this time the Regulator has finished its first job and comes along to regulate and distribute new ballast ahead of the surfacing gang. Only the outline of the machine is shown to indicate that it is the same one which did the plowing from tie ends.

It is followed by a second Jackall raising and leveling track for final surface ahead of a multiple tamper. This tamper is the only machine in operation not currently manufactured by Kershaw, but a Kershaw Tamper now is on the way.

Between the Jackall and tamper are two men with hand jacks for spotting. Following the tamper, the Regulator performs its third job of regulating and shaping ballast shoulder and dressing track.

Indicated at extreme right are the eight men used for lining track, unloading ballast and ties, etc., while below the drawing is a mechanic and foreman. These machines and these men can perform the ENTIRE retimbering, reballasting and resurfacing job.

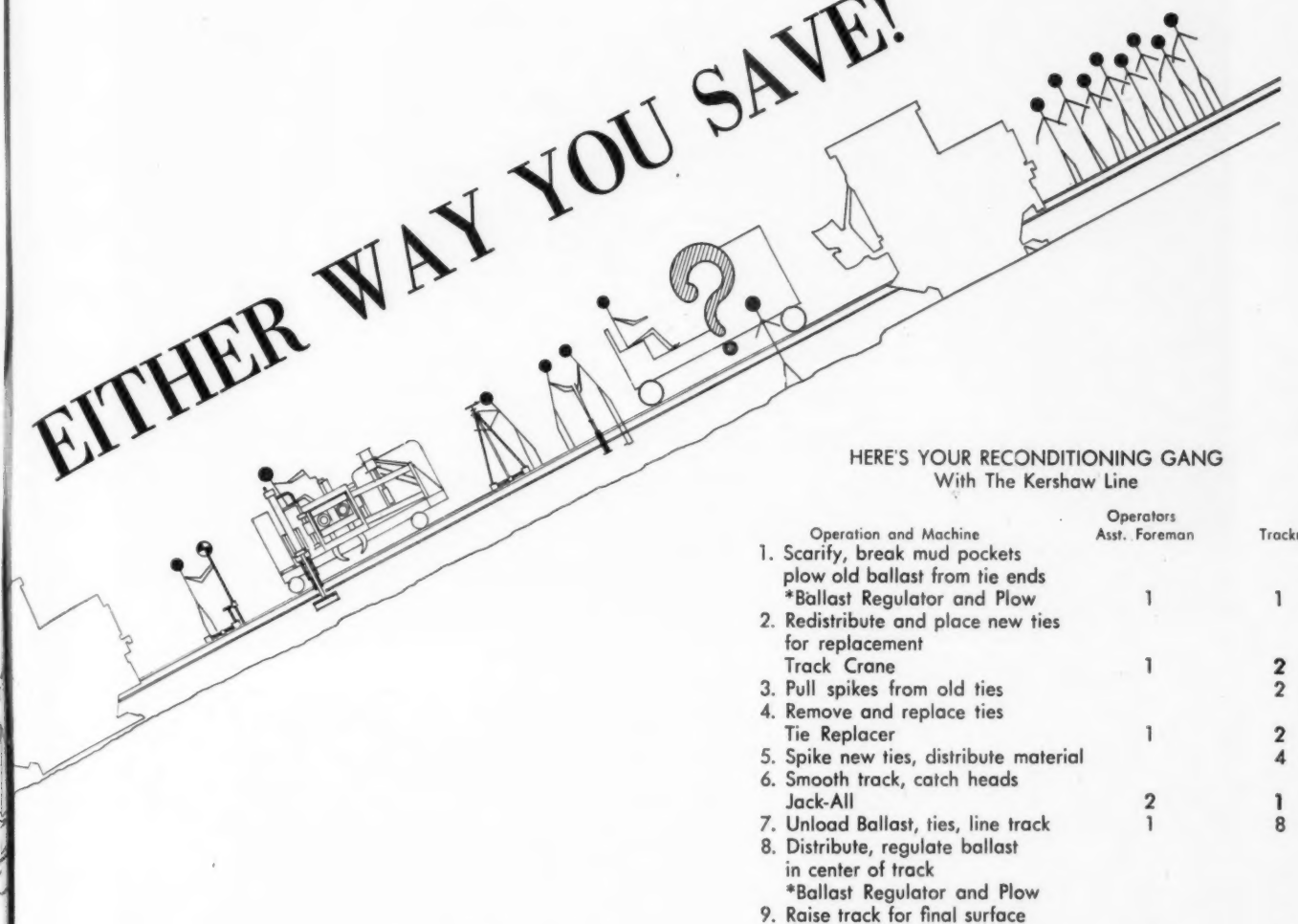


KERSHAW MANUFACTURING CO., INC., P. O. BOX 510, MONTGOMERY, ALA.

TRACKWORK EQUIPMENT DESIGNED, DEVELOPED AND PROVEN ON THE JOB

BUY IT! RENT IT!

EITHER WAY YOU SAVE!



HERE'S YOUR RECONDITIONING GANG
With The Kershaw Line

Operation and Machine	Operators Asst. Foreman	Trackmen
1. Scarify, break mud pockets plow old ballast from tie ends *Ballast Regulator and Plow	1	1
2. Redistribute and place new ties for replacement Track Crane	1	2
3. Pull spikes from old ties		2
4. Remove and replace ties Tie Replacer	1	2
5. Spike new ties, distribute material		4
6. Smooth track, catch heads Jack-All	2	1
7. Unload Ballast, ties, line track	1	8
8. Distribute, regulate ballast in center of track *Ballast Regulator and Plow		
9. Raise track for final surface Jack-All	2	1
10. Tamp ties with Multiple Tamper	2	
11. Regulate and shape Ballast *Ballast Regulator and Plow		
General foreman and Mechanic	2	
Total for complete rehabilitation	12	21

* Ballast Regulator scarifies, plows ballast from tie ends, regulates, distributes and shapes ballast shoulder.

Kershaw Manufacturing Co. will be happy to arrange a free, no-obligation demonstration of any of its machines on your railroad, under conditions you must face the year round. Just write and ask for it.

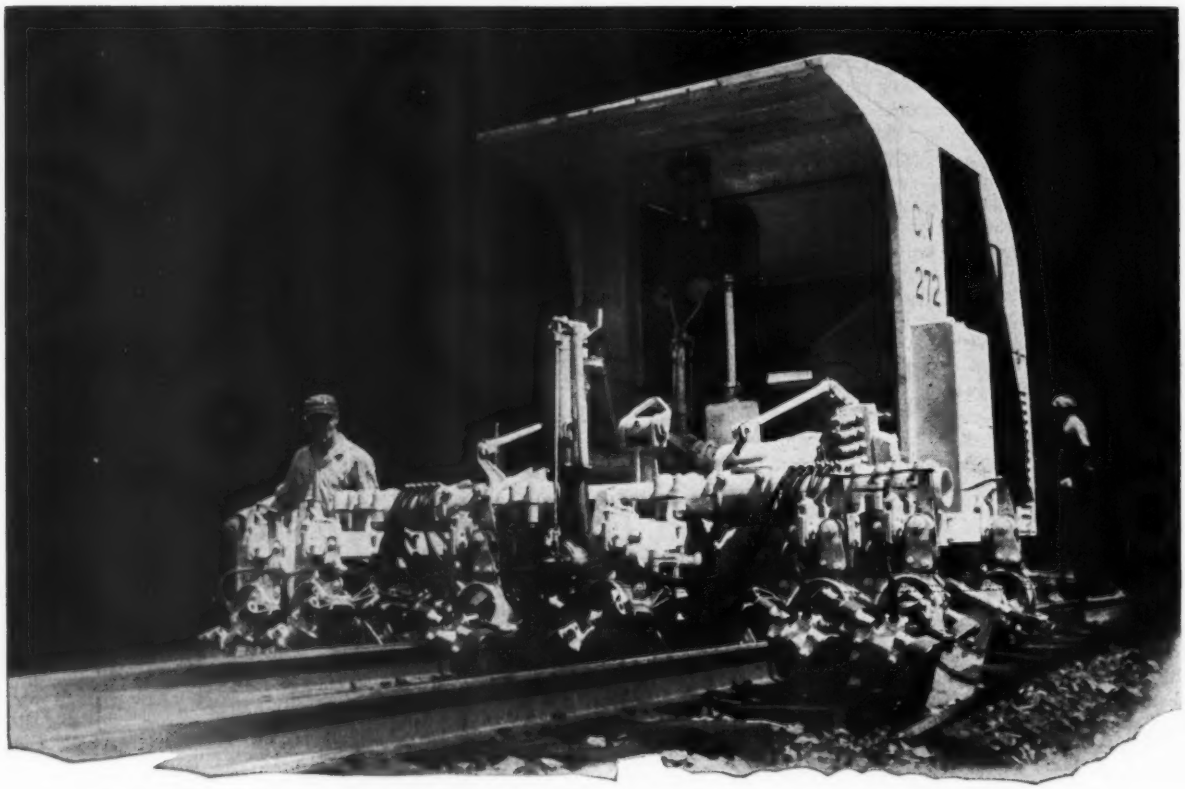
AFTER

KERSHAW
MANUFACTURING CO. INC.

TRACK-TALK — Published every other month by Kershaw Manufacturing Co. Write for your free copy today.

KERSHAW MANUFACTURING CO., INC., P. O. BOX 510, MONTGOMERY, ALA.

TRACKWORK EQUIPMENT DESIGNED, DEVELOPED AND PROVEN ON THE JOB



HERE'S HOW YOU SAVE WITH

JACKSON MULTIPLES

MORE FINISHED TRACK PER DAY

In any lift, from that which is no lower than the average size of ballast used to the very highest, no tamper equals the ability of the Jackson Multiple to put up high quality finished track.

OF GREATER UNIFORMITY

In the majority of cases no follow-up operation, whatever, is required. It's the only on-track tamper that tamps the "vital spot" — the load-bearing zone directly beneath the rail.

WITHOUT DAMAGE TO TIES OR BALLAST

The unique and powerful vibratory action of the Multiple's tamping blades thoroughly keys and consolidates the ballast particles without breakage and absolutely no damage to ties. Roadbeds thus achieved last longer, require less maintenance.

AT MUCH LOWER INVESTMENT COST

The Jackson Multiple costs far less than any machine that can be considered comparable.

AND EXCEEDINGLY LOW MECHANICAL UPKEEP

Rugged and reliable, maintenance of the machine is extraordinarily simple and inexpensive, and much of it is readily done in the field.

Write wire or phone for complete details or consultation with one of our experienced track engineers.

MFD. BY JACKSON VIBRATORS INC. LUDINGTON, MICH.

SOLD IN U.S.A. BY

ELECTRIC TAMPER & EQUIPMENT CO.

LUDINGTON MICHIGAN

See how TIMKEN® bearings help keep this car out of the shops

MOUNTED in a spring-cushioned housing, Timken® bearings on the axles of this Kalamazoo 27 AW-F are one reason why the car's maintenance requirements are so low.

Because these Timken axle bearings take both radial and thrust loads, the wheel gage is precisely maintained. No extra thrust bearings or washers are needed, which eliminates one more source of maintenance.

The true rolling motion of Timken bearings plus the smooth finish of their rollers and races practically eliminate friction. Wear is minimized, costly breakdowns avoided.

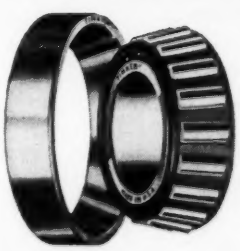
Line contact between rollers and races on Timken bearings provides load-carrying capacity to spare. They take heavy shock loads with ease, prevent car breakdowns on right of way.

This car has a special reverse transmission which allows the car to travel at equal speeds in either direction. Timken bearings in the transmission keep it smooth-acting and trouble-free.

Look for Timken bearings on the equipment you buy. If you build equipment, talk to us about bearing selection. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

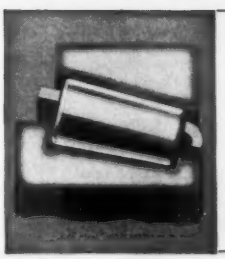
KALAMAZOO MANUFACTURING COMPANY uses Timken bearings on the axles and reverse transmission for long life with minimum maintenance.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



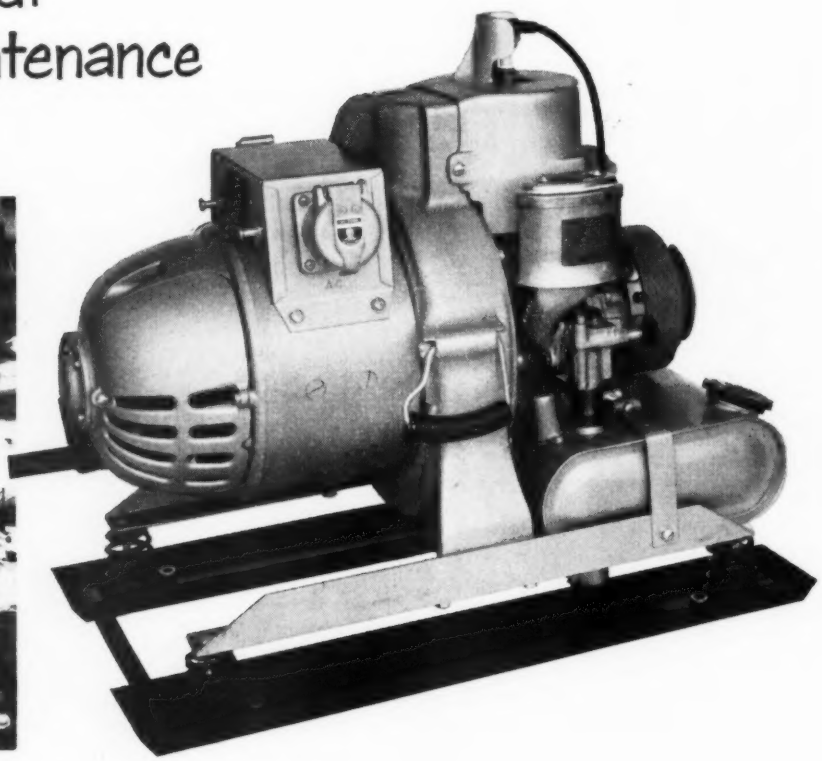
GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races. Timken bearings carry greater loads, hold shafts in line, wear longer. The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

NOT JUST A BALL — NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER — BEARING TAKES RADIAL AND THRUST — LOADS OR ANY COMBINATION

Are You in an Economy Mood?

SEE HOW HOMELITE Dual Purpose GENERATORS Can Cut Your Maintenance Costs



The fastest, lightest weight, easiest-to-handle tools that money can buy today are high cycle power tools. They save time, labor, *money* every time they're used. And with a Homelite Carryable Dual Purpose Generator, you can use these labor-saving, money-saving power tools anyplace on your road.

What's more, with a Homelite Dual Purpose Generator you're not limited to high cycle operations. You can still use your good standard universal power tools or operate your floodlights. For a Homelite gives you *both* high cycle and standard power . . . both from the same generator.

So if you're in an economy mood, make the most of power tool savings . . . high cycle and standard . . . both operated by one Homelite Generator.

Write for a free demonstration.

Manufacturers of Homelite Carryable Pumps • Generators Blowers • Chain Saws

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE CORPORATION

203 RIVERDALE AVENUE • PORT CHESTER, N. Y.

Canadian Distributors: Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Ottawa

For additional information, use coupon, page 122

Have you compared costs of weed control lately?

Weed control
is simple, economical
and long-lasting
when you use

Du Pont "Telvar" W
Weed Killer

One spraying with "Telvar" W gives rails and ties season-long protection from weeds and grasses.

As little as 40 to 60 pounds of Du Pont "Telvar" W per acre rid key areas of hazardous vegetation *for a growing season or longer!* This powerful weed killer works through the roots . . . gives long-term protection around sidings, track, switches, culverts, bridges, fences and railyards.

YOU'LL SAVE labor costs and the storage space with "Telvar" W. One spraying usually does the job for the season; no more bulky weed-control chemicals to store and spread . . . takes the place of cutting, mowing or expensive multiple spraying.

YOU'LL PROTECT property and machinery and make maintenance easier. "Telvar" W kills weeds and prevents them from fouling up equipment. Ties and roadbeds will last longer . . . need much less attention. Yards and tracks will always look clean, neat and efficient.

DU PONT TELVAR W
REG. U.S. PAT. OFF. TRADE-MARK
Weed Killer

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

YOU'LL PROFIT with "Telvar" W because it brings new efficiency and economy to weed-control programs. It's a wettable powder easily mixed with water. "Telvar" W is non-flammable, non-volatile and low in toxicity to humans and animals. "Telvar" W will not corrode spraying equipment.

For more information about Du Pont "Telvar" W, clip and mail the coupon to E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington 98, Delaware.

Mail This Coupon for Free Booklet

On all chemicals always follow directions for application. Where warning or caution statements on use of the product are given, read them carefully.

E. I. du Pont de Nemours & Co. (Inc.)
Grasselli Chemicals Department Rm. D-4026
Wilmington 98, Delaware

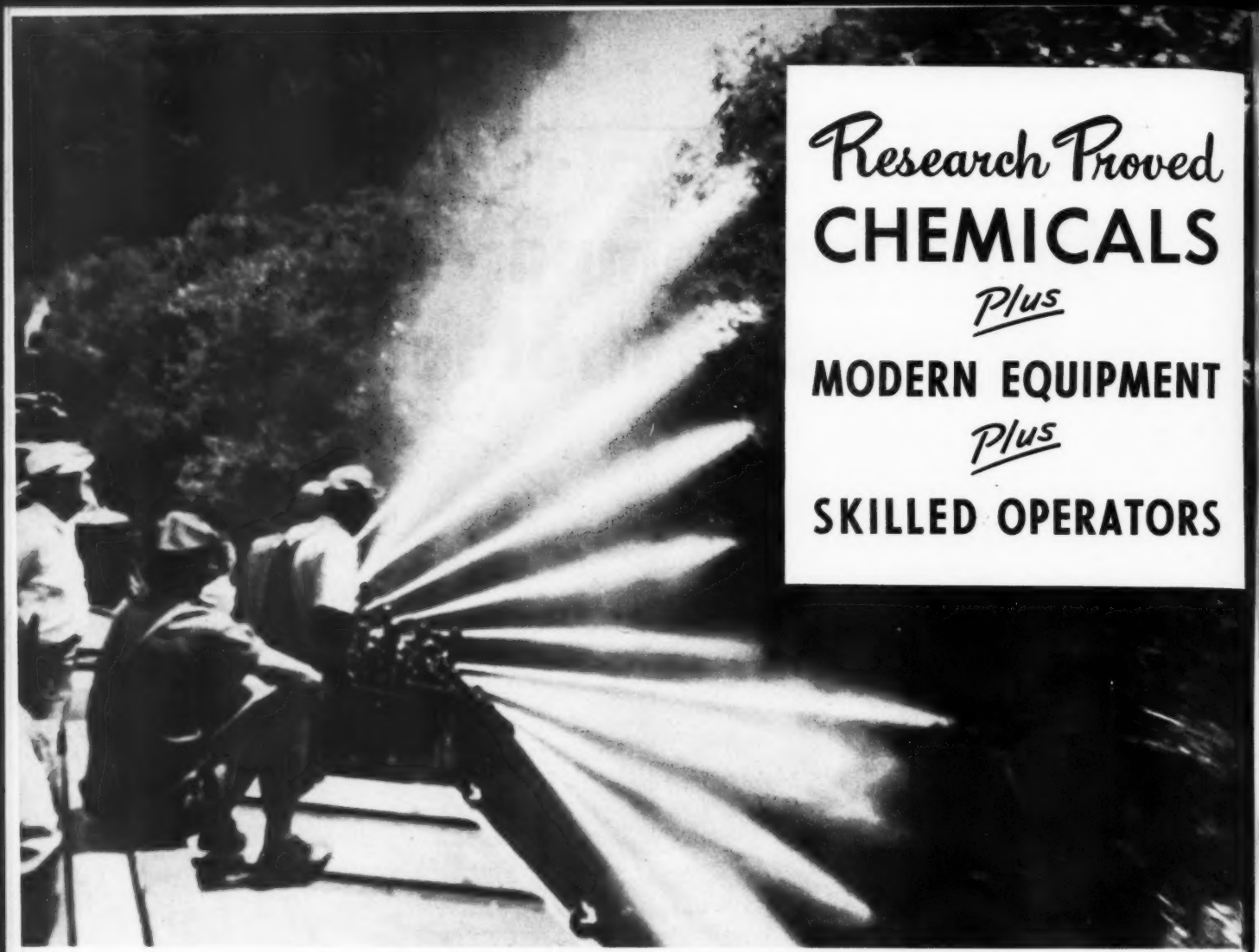
☐ Please send me your booklet describing positive weed control with "Telvar" W. ☐ Send me the name of my nearest supplier.

Name_____ Position_____

Firm_____

Address_____

City_____ State_____



Research Proved
CHEMICALS
Plus
MODERN EQUIPMENT
Plus
SKILLED OPERATORS

...Add Up to Low Cost Per Mile

ANNIVERSARY 30TH 1924-1954 R.H. BOGLE COMPANY

It's as simple as that—the Bogle formula for successful, *economical* weed and brush control. And it's working, judging from the number of repeat orders from roads with varying roadway problems.

Above is a typical scene of a Bogle spray train in action "gunning" a heavy growth of brush on the right of way of a prominent Southern road. The powerful jets spray the growth to a distance of approximately 100 ft. from the center of the track.

Plan now to keep ahead of roadbed and roadway growth the tested, time-tried Bogle way. We shall be glad to sit down with you and work out a program.

TRADE MARK R B H

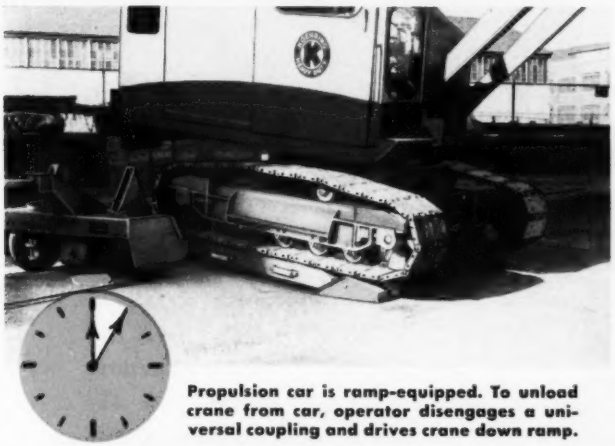
The R. H. BOGLE Company

ALEXANDRIA, VA.

Memphis, Tenn.

COMPLETE WEED and BRUSH KILLING SERVICE

Koehring RailAid powers its own rail propulsion car . . . travels job-to-job at rail speeds up to 20 m.p.h. Overhead clearance is low . . . 10 ft.-11 in. from top of rails. Maximum width (at crawlers) only 9 ft.-8 in.



Propulsion car is ramp-equipped. To unload crane from car, operator disengages a universal coupling and drives crane down ramp.

Crane lifts its propulsion car off the track . . . clears the right-of-way for uninterrupted rail traffic. Entire loading or unloading operation takes less than 10 minutes!

ON or OFF-TRACK in *10 minutes* with Koehring RailAid®

Koehring heavy-duty RailAid combines all the advantages of a self-propelled track crane with the flexibility of a free-moving, off-track crawler crane. The crane works on or off the propulsion car . . . safely lifts 6.9 tons on the car . . . 8.9 tons on the ground.

RailAid travels at rail speeds up to 20 m.p.h. forward and reverse . . . is self-powered through extended lower traction shaft of crane and universal coupling on rail propulsion car. Crane loads or unloads itself on ramp-equipped car in less than 10 minutes. It sets car on and off-track . . . clears the rails for normal traffic. Work of crane and the road crew is uninterrupted during the complete shift.

Usefulness is unlimited . . . RailAid loads and unloads materials in yards and along the line, lays rails, places timbers and trusses on bridge construction and repairs, speeds scrap handling and salvage. Readily converts to magnet crane, pile driver, clamshell, dragline, ½-yard shovel or hoe.

K455RTS

KOEHRING COMPANY, Milwaukee 16, Wis.

Send us more information on Koehring RailAid.

NAME .....

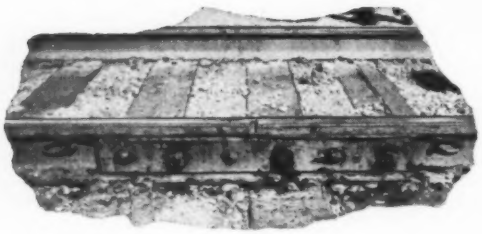
TITLE .....

COMPANY .....

DIVISION .....

ADDRESS .....

WHEN THIS HAPPENS, *it costs you money*

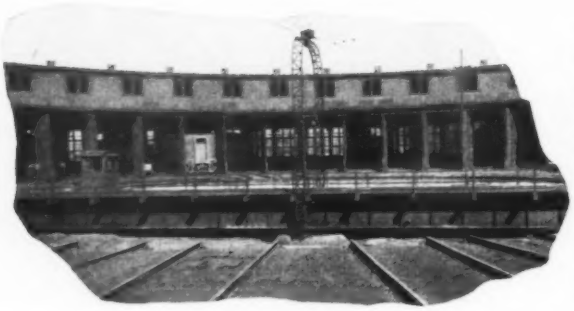


RAIL JOINTS

Preventive maintenance costs less than rail and joint replacement—less in labor and materials. The remedy is simple—one-coat NO-OX-ID does the job. Remove rust scale, then coat with NO-OX-ID to cut maintenance costs on railroads. Write for Bulletin 3077.

BRIDGES

Replacing rust-ruined steel bridge members is expensive. NO-OX-ID Rust Preventives stop corrosion—conserve materials and man-hours. Wherever steel is used—on railroad bridges, water tanks, structures, tracks, signals, pipeline—NO-OX-ID prevents rust and corrosion. Send for informative NO-OX-ID literature.



TURNTABLES

NO-OX-ID's serve a dual purpose by providing *chemical* as well as *mechanical* protection to keep railroad turntables free from destruction by corrosion. NO-OX-ID gives long-term protection with a tough film that seals out moisture. Floor systems protected by NO-OX-ID are not affected by sand, cinders, moisture and other residual deposits that cause corrosive action on metal surfaces.

Dearborn's **working on the railroad . . .**

to reduce maintenance costs from shop to terminal. Many leading railroads everywhere rely on Dearborn NO-OX-ID rust preventives, Dearborn's railroad cleaners, diesel cooling water treatments, Dearborn's De-Ionizing and Zeolite systems.

consult your Dearborn field representative—

His broad experience plus Dearborn's extensive laboratory and research facilities are at your service . . . without obligation.

Dearborn

TRADE MARK

DEARBORN CHEMICAL COMPANY
MERCHANDISE MART PLAZA
CHICAGO 54, ILLINOIS

THE ORIGINAL RUST PREVENTIVE

NO-OX-ID

SAVE TIME
AND MONEY WITH

BLACRETE®

the tough, durable, bituminous concrete paving mix

BLACRETE is a bituminous concrete made with liquid asphalt scientifically mixed with sand and stone. Every step in the manufacture of BLACRETE is under constant, capable supervision . . . backed by 40 years of Rock Road experience. It contains Kotal, an all-weather bonding ingredient which increases cohesion of asphalt and improves resistance to weathering. BLACRETE is designed to be suitable to your local weather and traffic conditions.

BLACRETE can be stock-piled as it remains workable for long periods. It sets quickly and permanently when compacted, giving a long wearing, all-weather surface.

Ideal for

- **Railroad Crossings**
- **Station Platforms**
- **Parking Areas**
- **Roads—Walks—Ballast**

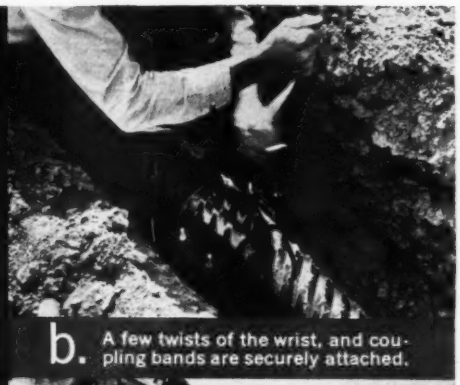
Write for descriptive literature

AVAILABLE
immediately in railroad car loads or in truck load quantities from plants located in middle and southwest.

ADDRESS INQUIRES TO:

ROCK ROAD CONSTRUCTION CO.
5915 Rogers Avenue • Chicago 30, Illinois • Phone: SPring 7-8800

a. Two men have no trouble in handling 20-foot lengths of Armco Perforated Pipe.



b. A few twists of the wrist, and coupling bands are securely attached.

c. Backfilling quickly completes installation of the subdrainage system.

This pipe "Highballs" underground water

This yard will never have a problem with troublesome underground water. The railroad made sure of this by installing an Armco Subdrainage System. The Armco Perforated Pipe drains water fast, before it has a chance to weaken roadbeds and cause high maintenance costs. Installation is simple and economical, even with small crews.

In this yard, they used over 5 miles of 6-inch diameter Armco Perforated Pipe. Work went fast with the long 20-foot lengths. Joining with a simple bolted coupling band took only a couple of minutes. And they could start backfilling right away.

How about service? Thanks to flexible, corrugated metal design, the pipe will never break, crack or disjoint under heavy loads or vibration.

In new or old installations, Armco Perforated Pipe is the reliable, low-cost cure for water-logged subgrades. Write us for complete data. Armco Drainage & Metal Products, Inc., 2454 Curtis St., Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO Perforated Pipe

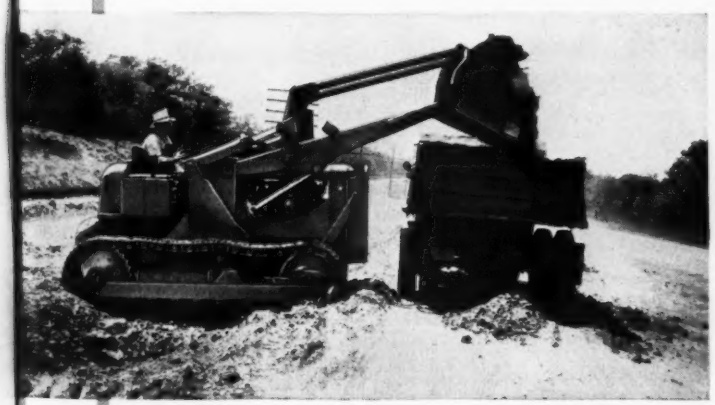
ARMCO

TWO METHODS
OF RESTORING EMBANKMENTS

Story-in-pictures of how a southwestern railroad restored embankments along several miles of track in Texas.

1 Earth was excavated from high spots along right-of-way. Here this work is seen being done with an Allis-Chalmers 2-yd. HD-9G Tractor Shovel.

Dirt was loaded to trucks which hauled it to where embankment repairs were being made.



Material dumped along tracks then was spread and compacted by this Allis-Chalmers 72-hp. HD-9 Tractor equipped with angledozer.

2 Farther down the right-of-way, where another crew was at work, the procedure was a little different. Tractor-scraper units, such as this Allis-Chalmers HD-9 Tractor pulling a 5-yd. two-wheel scraper, hauled dirt from high spots along the track and dumped it where embankment was to be built up.

The dirt was spread and compacted by this Allis-Chalmers 104-hp. AD-40 Motor Grader, which shaped the shoulders at the same time.

The railroad who's equipment is shown here reports now handling 80 percent of roadbed construction and maintenance by off-track methods — for safety, economy, flexibility and speed. It uses tractors principally for grading, plus heavy hauling and clearing derailments. Motor graders are used for lighter grading and for dressing.

Write for complete information on how Allis-Chalmers Tractors, Tractor Shovels, Motor Graders, Motor Scrapers, Motor Wagons and Allied equipment can help *you* efficiently handle construction and maintenance. Or let us put you in touch with your railroad distributor.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U.S.A.

WOOLERY self-propelled off-track Joint Oiler with three operators can spray joints on 1½ miles of track per hour. Uses heavy lubricants heated in 25-gallon tank and sprayed into joints under pressure, for thorough, long-lasting economical lubrication. Only 30" wide, to operate easily or turn around between double tracks.

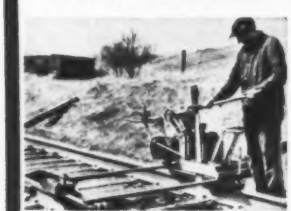
WOOLERY Tie Plate Spacer quickly and accurately locates single or double shoulder plates at exact position on ties. Light in weight so that one man can easily handle it on or off track. Simple adjustment allows for changes in rail sizes. Ruggedly built for long service, this machine greatly speeds the job of rail laying.

WOOLERY Creosote Sprayer, with 60 gallon tank capacity. Equipped with generator burner to heat creosote, and wind protection hood to safeguard operators, it applies a metered amount of creosote to each freshly-adzed tie. Does a safer, more economical and uniform job than is possible by old fashioned hand swabbing or broom-and-pail methods.

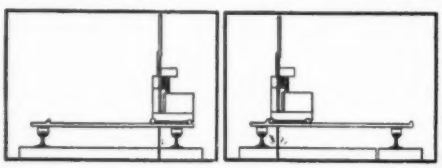
Manufacturers of Tie Cutters, Tie End Removers, Tie End Trimmers, Power Bolt Tighteners, Spike Drivers, Motor Cars, Push Cars, Tool Transporters, Weed Burners, Extinguisher Cars, Chemical Sprayers, Tie Plate Spacers, Creosote Tie Sprayers, Rail Nippers, Flangeway Cleaners, Rail Joint Oilers, Power Joint Lubricators.

WOOLERY MAINTENANCE MACHINES *for* Better Track & LOWER COST!

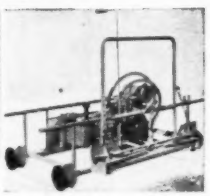
The WOOLERY Team for Greater Savings in Tie Renewals!

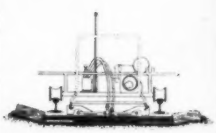


The WOOLERY Tie Cutter provides a proven money-saving method of removing old ties without trenching, jacking up track, or adzing tops of rail-cut ties.



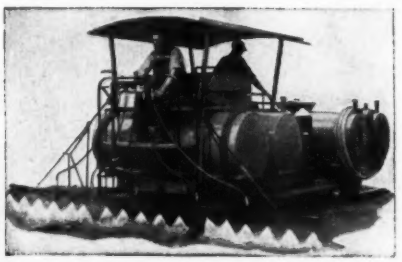
After tie has been cut on both sides, the operator of the NEW WOOLERY TIE END REMOVER removes center section in the usual manner with tie tongs and then moves the NEW WOOLERY TIE END REMOVER into position and drops the double-ended hydraulic cylinder into the tie-bed. A simple turn of the valve pushes the tie-end completely clear of the rail.





WOOLERY 300 Motor Car gives advantages of a light car, plus greater pulling power with 4 wheel drive and heavy duty performance. Carries 8 men and track tools. Can be fitted with detachable WOOLERY Flangeway Cleaner for winter duty.

WOOLERY Model PB-B Weed Burner will destroy a swath of weeds 15 feet wide in one trip or up to 25 feet with burner arms extended on second run. All three burners have electric ignition and individual controls. Only two operators required. Other WOOLERY Weed Burners in 1-burner and 5-burner models.



WOOLERY dual purpose Combination Sprayer and Weed Burner permits choice of chemical spraying (near buildings or in areas where burning is not practical) or weed burning, as desired. Chemical sprayer, covers 18-foot swath. Burning unit at opposite end covers 15 feet first trip; up to 25 feet second trip.

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K160	6.6 H.P.
K330	12.0 H.P.
K660	26.8 H.P.

K160

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K660

K330

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No. 303 of a series

RAILWAY TRACK and STRUCTURES

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 WEST MONROE STREET
CHICAGO 3, ILL.

March 1, 1954

Subject: Our Common Objectives

Dear Readers:

During a conversation I had the other day with a high-ranking engineering officer, comments were made on each side which led us to agree that some points of close similarity exist between the working conditions of railroad engineering and M/W officers on the one hand and editors on the other. We weren't exactly complaining, you understand, but just comparing notes on the amount of work each of us has to do and how much of this work must be completed within a specified time or by certain dates — "dead lines" as we call them in our business.

Just as we, as editors, must have our "copy" and "dummy" ready to send to the print shop by the dead-line date for a particular issue, so you, as supervisory employees, must pace yourself and your subordinates with the objective of getting this or that job done by some pre-determined completion date. I bring out this point of similarity between our jobs not because I feel that it has any deep significance (many other lines of endeavor also have "dead lines" in one form or another), but rather as a preface to some remarks I wish to make regarding how your objectives and ours have something in common in a much more fundamental sense.

I refer to our mutual dependence on the welfare of the railroad industry. As employees of that industry you have a direct stake in its continued prosperity. Even though we, as editors, are employed by a publishing house independent from the railroads our fortunes are no less firmly identified with those of the carriers. This relationship provides a very good reason why it is in the interests of our company to help the railroads in any way it can to assure profitable operations for them.

The Simmons-Boardman publishing set-up is ideally suited to perform this function in the most effective way by reaching the major departments with specialized publications, each tailored to meet the specific needs of the department it serves. Railway Track and Structures, for example, is concerned exclusively with the problems of engineering and maintenance-of-way officers, the objective being to provide those officers with a continual stream of ideas and material that will help them do their work more effectively and economically. Railway Locomotives and Cars and Railway Signaling and Communications provide the same exclusive service for their respective departments.

At the top of our publishing pyramid is the Railway Age. While dealing also with departmental material, but from the managerial viewpoint, the weekly goes into the broader aspects of railroading — regulation, finance, operations, traffic, competition, etc. — its objective being not only to keep management, as well as personnel of other ranks, advised of developments in all these fields, but also to help develop and promote policies beneficial to the industry as a whole. Finally, we have a new magazine, Railway Freight Traffic, which was established for the purpose of helping sell railway freight service to industrial traffic managers.

Thus, you see, we consider ourselves part and parcel of the railroad industry, that your problems are yours and that the degree to which we are successful in helping you solve them is dependent on the kind of material we send to the print shop every time we meet a dead line.

Yours sincerely,

Merwin H. Dick

Editor

MHD:lw

Members: Audit Bureau of Circulations and Associated Business Publications

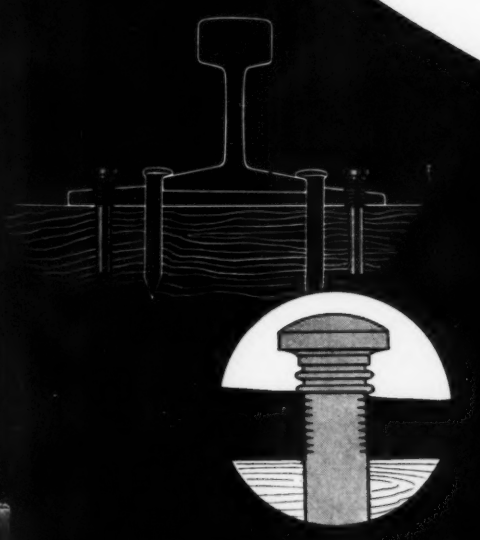
THE RACOR STUD

IT EXTENDS TIE LIFE

- *BY REDUCING TIE ABRASION*
- *BY REDUCING SPIKE KILLED TIES*
- *BY REDUCING SPLIT TIES*

IT PROVIDES STURDIER TRACK

- *BY MAINTAINING BETTER LINE AND GAGE*
- *BY DEFERRING TIE REPLACEMENT*
- *BY REDUCING LABOR COSTS*



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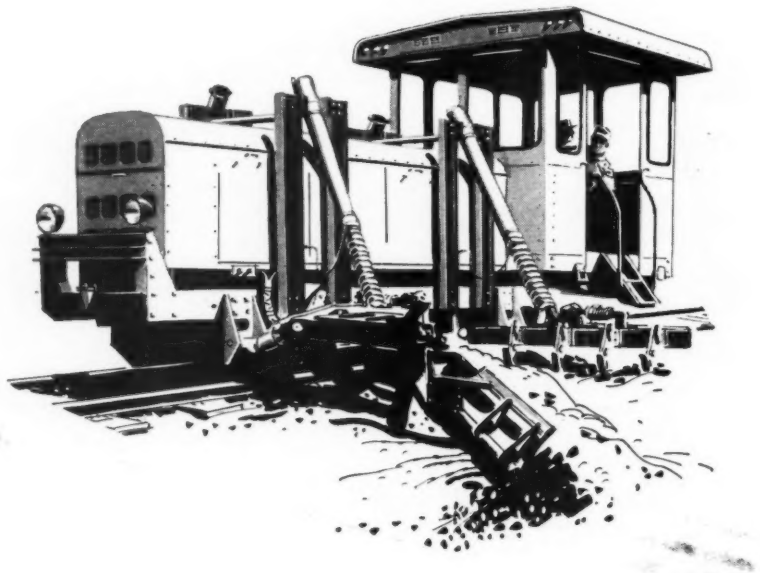
WHATEVER YOUR NEEDS FOR

ballast maintenance



Fairmont has the answer!

Performance ON THE JOB COUNTS

Ballast maintenance is, beyond all question, one of the most important and exacting tasks in the entire field of railway maintenance. Fairmont, in keeping with its tradition of providing the proper equipment for every maintenance job, designs and manufactures a wide variety of products expressly for this assignment. Shown here is the most significant of these—the W77 Series A Ballast Maintenance Car. Powered by a dependable 112-h.p. engine with eight speeds and a two-way, four-wheel drive, this unit offers the finest method yet devised for maintaining road-bed ballast. By mounting various tools on the hydraulically-operated tool frame of the W77 Series A, it is possible to handle the entire ballast maintenance operation quickly, easily and economically. These tools are shown and described in the panel below, along with a tool car which has been specially designed for use with this unit. In its thoroughness, its efficiency and its speed of operation, the W77 Series A is convincing proof that for ballast maintenance—as for every other responsibility of railway maintenance—you should always look to Fairmont!

FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINNESOTA

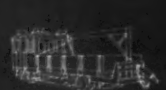
SCARIFIERS break up frost, compacted shoulder ballast, removed ditches, restore drainage, and serve as the lead tool for discs, 10-foot blades and ballast box.

8-INCH BLADES serves to strike off or re-shape the berm for better drainage and appearance. This tool also assists in bringing the subgrade elevation up to standard.

BALLAST EQUALIZING BOX equalizes and correctly shapes old or new shoulder ballast. The box can be hydraulically turned to operate in either direction.

DISCS break up clods and clumps of fouled ballast to improve drainage and appearance. They also aid in re-shaping the shoulder where ballast is well distributed.

CENTER PLOWING EQUIPMENT is used to move ballast from between the rails out to the shoulders during re-ballasting. Wing blades move ballast off ends of the ties.



TOOL CAR, which connects with the W77 Series A, holds tool attachments. A crane at the front helps change tools, while rear cab houses the pilot train crew.

SPECIFY FAIRMONT FOR INSPECTION, SECTION AND GANG CARS, HY-RAIL CARS, MOTOR CAR ENGINES, PUSH CARS AND TRAILERS, WHEELS, AXLES AND BEARINGS, BALLAST MAINTENANCE CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, TIE RENEWAL EQUIPMENT, RAIL RENEWAL EQUIPMENT, WEED CONTROL EQUIPMENT.

RAILWAY TRACK and STRUCTURES

TRADEMARK

Published on the first day of each month by the

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 West Monroe St., Chicago 3

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New York 7,
30 Church Street

Washington, D. C., 4
1081 National Press Bldg.

Cleveland 13,
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Portland 5,
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Member of the Associated Business Papers (A.B.P.) and of the Audit Bureau of Circulations (A.B.C.), and is indexed by Engineering Index, Inc.

PRINTED IN U.S.A.

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Let's Take a Look Ahead

A Guest Editorial

By C. G. Grove
President, A.R.E.A.

It is always worth while to take an inventory and find out just where we stand. We are prone to neglect to look back and then ahead, especially when we are busy with the tasks at hand. Our daily work becomes commonplace. We must raise our gaze to the stars.

Those of us who have spent many years in maintenance-of-way work will find when we do this that the ways and methods of performing routine work have changed immeasurably. This improvement, in most cases, has come about by the use of machinery instead of hand labor and has made our tasks easier, reduced our costs and made our work more lasting. While we have brought about a big improvement in our methods we have but scratched the surface. The improvement in a host of operations, such as tamping ties, laying rail, cleaning ballast, inserting ties, cleaning ditches, grading the right of way, anchoring track, etc., did not just happen. Each operation is the result of a need, followed by the vision of someone who first used his imagination and then worked out the problem with patience and ingenuity. The first result may have been crude and may have failed in part, but it was the finally perfected mechanism that lessened our burden and increased our production.

So much for the past—what of the future? Does not the present generation have even a greater opportunity than the generation of yesterday? The incentive is greater if we are to bring about the reductions in expenses that are so necessary during these days of increased competition.

Through thought and analysis let us try to produce additional refinements in our methods. Let us create worth-while machinery that will guarantee the continuance of the thrilling parade of new devices that has been passing before us.

Let us not forget the part that has been played in this adventure by the supply industry. The companies comprising that industry have always been open-minded and have cooperated fully with us. They are to be highly commended.

While new machines and procedures are being perfected, we must not forget to apply the refinements in planning that are so necessary to the success of our programs. Careful analysis of the properties will show us where our money will bring the best return. Heavy-tonnage territory must be given preference; less important sections can well be allotted much less and still be properly maintained. We must be able to select the places for the expenditure of available funds in proportion to the need.

The same thinking applies to the care and use of our existing equipment. If it is not properly maintained while new machinery is in the offing our programs may be badly hurt and in some cases annulled because we have failed to give proper weight to this essential requirement.

Probably the most important factor in our future success is not stressed enough by any of us: It is the training of our men and a just appreciation of their efforts on the part of their superiors. A proper balance of these factors result in "esprit de corps," the common devotion of members to an organization. Without it there is always a question of the full realization of plans. With it there can be no failure. The future is full of challenging problems. We will meet them and, with enthusiastic hard work, we will conquer them.

TEAR HERE AND POCKET FOR READY REFERENCE

PROGRAM

Fifty-Third Annual Meeting
American Railway Engineering Association

March 16-18, 1954
Palmer House, Chicago

TUESDAY, MARCH 16

Morning Session—9:45 to 12:00
Grand Ballroom

Address of C. G. Grove, president
Report of Neal D. Howard, secretary
Report of A. B. Hillman, treasurer
Greetings from the Signal Section, AAR, W. N. Hartman, chairman
Greetings from the Electrical Section, AAR, R. I. Fort, chairman
Address—"Railroad Progress Through Engineering," by R. G. May, vice-president, Operations and Maintenance Department, AAR
Address—"Nuclear Power and the Railroads," by John R. Menke, president, Nuclear Development Associates, Inc.
Address—"Research Review," by G. M. Magee, director of engineering research, Engineering Division, AAR
Motion Picture—"225,000-Mile Proving Ground"

Afternoon Session—2:00 to 4:45
Grand Ballroom

Reports of Committees on
- Yards and Terminals
- Economics of Railway Location and Operation
  - Address—"Economics of Railway Operation in a Competitive Era," by Fred N. Nye, director of transportation research, New York Central System
- Waterways and Harbors
- Highways
  - Address—"The Effectiveness of Highway-Railway Grade Crossing Protection," by W. J. Hedley, assistant chief engineer, Wabash
- Cooperative Relations with Universities
- Contract Forms
- Records and Accounts

WEDNESDAY, MARCH 17

Morning Session—9:00 to 12:00
Red Lacquer Room

Reports of Committees on
- Water, Oil and Sanitation Services
- Wood Bridges and Trestles
  - Motion Picture—"Fire Protection of Timber Bridges on the Santa Fe," with commentary by C. H. Sandberg, assistant bridge engineer, Santa Fe
- Clearances
- Impact and Bridge Stresses
  - Motion Picture—"Laboratory Investigation of Full-Size Reinforced Concrete Railroad Bridge Slabs"
- Masonry
  - Address—"Alkali Aggregate Reaction in Concrete," by P. D. Miesenhelder, research engineer concrete, Engineering Division, AAR
- Iron and Steel Structures
  - Address—"Painting Railroad Bridges," by Joseph Bigos, senior fellow, Mellon Institute, director of research, Steel Structures Painting Council

Association Luncheon—12 Noon
Grand Ballroom

Address by J. M. Symes, executive vice-president, Pennsylvania

Afternoon Session—2:30 to 5:15
Red Lacquer Room

Reports of Committees on
- Waterproofing
- Wood Preservation
- Buildings
- Roadway and Ballast
  - Address—"Lateral Forces Beneath Fills," by R. B. Peck, research professor of soil mechanics, University of Illinois
- Economics of Railway Labor
  - Address—"Labor Economics in Retrospect," by J. S. McBride, chief engineer, retired, Chicago & Eastern Illinois
- Maintenance of Way Work Equipment

THURSDAY, MARCH 18

Morning Session—9:00 to 12:30
Grand Ballroom

Reports of Committees on
- Ties
- Track
  - Address—"Progress in Brine Corrosion Investigation," by S. K. Coburn, chemical engineer, Engineering Division, AAR
- Special Committee on Continuous Welded Rail
- Rail
  - Featuring a series of addresses and comments on shelly rail, by R. E. Cramer, research associate professor, University of Illinois; H. J. Grover, Battelle Memorial Institute; M. M. Frocht, professor of mechanics, director of experimental stress analysis, Illinois Institute of Technology; and L. S. Crane, engineer of tests, Southern System.
- Closing Business
- Installation of Officers

2:00 to 4:30

Open house at the AAR Central Research Laboratory to see facilities and equipment and witness tests under way.

Committee Meetings

Luncheons or meetings of individual committees are scheduled to be held during the convention as follows:

Monday, March 15

Highways—meeting and luncheon, 9:30 a.m.—Room 5

Tuesday

Roadway and Ballast—luncheon, 12:30 p.m.—Rooms 15 and 16
Ties—meeting, 2:00 p.m.—Room 4
Track—luncheon (subcommittee chairmen only), 12:30 p.m., Room 3
Buildings—meeting, 2:00 p.m.—Room 7
Records and Accounts—luncheon and meeting, 12:30 p.m.—Room 5
Water, Oil and Sanitation Services—luncheon, 12:30 p.m.—Crystal room; meeting at 2:00 p.m.—Room 8
Yards and Terminals—luncheon, 12:30 p.m.—Room 7
Economics of Railway Location and Operation—luncheon, 12:30 p.m.—Room 4
Contract Forms—luncheon, 12:30 p.m.—Room 6
Economics of Railway Labor—luncheon, 12:30 p.m.—Room 9
Waterways and Harbors—meeting, 9:00 a.m.—Room 4
Clearances—luncheon, 12:30 p.m.—Room 795

Wednesday

Wood Preservation—meeting, 2:30 p.m.—Room 4

Thursday

Continuous Welded Rail—luncheon, 12:30 p.m.—Room 4

Note—All rooms from 1 to 13, and including the Crystal room, are located on the 3rd floor of the Palmer House; Rooms 15 and 16 are located on the Club floor, midway between the 4th and 5th floors.

Large Mechanized Gang . . . Cleans Ballast . . .

CRIBEX MACHINES, in batteries of seven and five units, pull the dirty ballast from the cribs.

BALLASTEX-SCREENEX combinations, working one on each side, pick up, clean and return ballast to track.

For carrying out its 1954 out-of-face program of renewing ties, cleaning ballast and raising track, the Norfolk & Western organized an 80-man gang and equipped it with a large number of machines to obtain a high degree of mechanization. A new machine, a Trakliner, was tried out with the force.

● The Norfolk & Western is one of those roads which has a part of its double-track main line in a territory where track seldom freezes up solid, so that heavy maintenance work can be carried on in some sections practically the year around. In January, 1954, the road organized an 80-man gang to carry out ballast-cleaning and tie-renewal work at the easterly end of its main track near Suffolk, Va., and equipped it with machines to expedite this work. The operations that are mechanized include the loosening of the ballast at the crib ends; picking up and cleaning the ballast from the cribs, shoulders and intertrack space, and returning it to the track; raising and tamping the track; removing the old ties and inserting the new ones; driving the spikes and piling the old ties. The road also experimented with a new machine, a Trakliner, for lining the track.

The newly organized gang is actually a combination of two gangs employed during 1953, one being a 30-man gang and the other a 50-man gang. One of the reasons for combining the gangs is to minimize train delays while traffic traveling in both directions is diverted over one main track, thereby giving the track forces sole occupancy of the track on which the gang is working. A supervisor is assigned to each of the points of train diversion for expediting train movements over crossovers on each side of the gang. Another reason for combining the gangs is to obtain full utilization of the track machines.

The equipment furnished to this gang includes 12 Cribex machines, 2 Ballastex-Screenex machine combinations with chain dollies, 3 Burro cranes, 2 air compressors with tamping and spike-hammer air tools, a Power Jack, a dump car, 3 Gandy tie-removal and inserting machines, 3 Multiple tampers, and a spike puller, plus several motor cars, trailers and push cars.

WORK TRAIN, previously used for unloading ties ahead of the gang, is now employed to unload fresh ballast.

A section crew, consisting of a foreman and six men, works in advance of the main gang. Equipped with a 210-cfm air compressor and six tamping tools having ballast-fork bars, this unit loosens the ballast at the ends of the tie cribs. This operation makes it easier for the operators of the following Cribex machines to insert the digger booms.

Lead Unit Cleans Ballast

The leading units of the main gang are organized for cleaning the ballast. When working on the eastbound main, seven Cribex machines, each taking every

A POWER JACK is employed to make a 2-in. track raise while laborers spot tamp adjacent ties.

STONE BALLAST, ¾ in. to 2 in. in size, is unloaded at rate of six cars a mile, and track is now ready for raising as shown at left.

Raises Track . . .

seventh rail and manned by an operator and laborer, clean the tie cribs along the south or field side. Then a Ballastex-Screenex combination picks up the dirty ballast from the south shoulder, cleans it, returns it to the track and wastes the dirt along the embankment slope. This machine is manned by one operator and four laborers, one of whom uses a chain dolly for stretching out and anchoring a chain by which the machine propels itself while working. Between the battery of Cribex machines and the Ballastex-Screenex is a Burro crane towing a push car containing gasoline and oil supplies, and a trailer for transporting men. This crane serves as the towing unit for this group of machines at the beginning and end of each day's work, and is also used for turning the Cribex machines when necessary to change them from one side to the other.

Another battery of Cribex machines, five in number, follows behind and cleans the tie cribs along the north side of the track, depositing the dirty ballast in the intertrack space. Another Ballastex-Screenex combination machine picks up this ballast, cleans it and returns it to the track. This group of machines was also accompanied by a Burro crane, push car and trailers.

The reason for having seven Cribex machines in the first battery working on the field side of the track and only five on the intertrack side is to create a proper balance between the work of crib cleaning and the ballast cleaning. The Ballastex-Screenex combination works slower on the intertrack side because it handles more ballast and has more train interference than the shoulder-working units. And, when the first battery of cribbing and ballast-cleaning equipment gets too far ahead of the second, it is turned to work on the intertrack side, thus keeping the work as a whole in balance.

A work train follows behind the cleaning units when necessary. Using about 15 men the work train unloads new stone ballast, from ¾ in. to 2 in. in size, at the rate of about six cars a mile. The work train is also used to unload crossties ahead of the gang for replacing those previously marked for renewal by the roadmaster. When not unloading ballast or crossties, these men are employed in dressing the ballast.

Raising and Tie Renewals

With fresh ballast unloaded, the track is ready for raising. This is done by an assistant foreman and seven men, one of whom operates a Power Jack which is spotted at the joints and centers of the rail. With the assistant foreman doing the sighting, the track is lifted by the Power Jack and four men fork-tamp two adjacent ties.

Two men follow the raising and remove the ballast from the tie plates on those ties that are to be renewed. On the day a reporter was observing this gang, the tie renewals were running almost six per rail, so four men were employed in removing the spikes from the bad ties and throwing them into a dump car being pushed along behind by another man. Whenever the tray of the dump car had a full load, it was dumped on one side of the track where a magnet could be used later for picking up the spikes.

This operation is followed by another group of men equipped with three Gandy machines. The three machines work in close proximity to one another, but despite this fact their work is performed with smoothness and rapidity. The leading Gandy pulls the tie from the track; the second machine orients the unloaded new ties, which are prebored, so that the right side is up, and sets them into position for insertion; and the third pulls the new tie into the track. Each of the Gandys is manned by an operator and one laborer and performs its work in a matter of seconds. The progress of these machines is mostly dependent upon the dexterity of the laborers in attaching and detaching the tongs of the machine.

Immediately preceding the leading Gandy, a man using a half-pick tool removes the tie plates from the bad ties. This hand tool has a pointed pick on one side of the handle, but the other side of the pick had been cut off to within a few inches of the handle eye so it can be used as a maul. When performing his duties, the man uses the maul side of his hand tool to loosen the

SPIKES, removed from the bad ties, are thrown into a Converto dump car and then dumped in convenient piles.

THREE GANDY machines are used to pull out the old ties, position new ones and pull them into the tie beds.

tie from the rail, after which he inserts the pointed side of the pick into a spike hole of the tie plate and pulls it out.

After an old tie has been pulled from its bed by the leading machine, two men following immediately behind quickly shovel the loose ballast away from the end of the exposed tie bed to permit easy entry of a new tie. The second Gandy then picks up one of the new ties, after which it is turned so as to have the score mark on the "line" side, inserts one end under the rail, and sets it down at right angles to the track. The third machine then pulls the new tie into the tie bed, with the laborer positioning the special pulling tongs and guiding the new tie into place. A small supply of extra ties is carried on a push car ahead of the third machine for use in the event that an insufficient number of crossties has been unloaded by the work train.

Spacing Ties and Tamping

The three Gandys are followed by a group of trackmen comprising the largest concentration of men in this gang. They are employed in spacing the ties, applying tie plates to the new ties, checking and correcting any irregularities in the track surface between the Power Jack raising points, and placing the ballast uniformly on the track for the tamping operation.

These trackmen are followed by three closely spaced Jackson Multiple tampers, each working on every third tie. The operators of these machines do not work to any prescribed number of tool insertions but make several insertions until they can tell by the "feel" of the machine that adequate compaction has been achieved. In addition to the operator, each machine employs a laborer on each side to fork the ballast to the tampers.

Following the tamping operation is a small group of men composing a spiking unit. One man reapplies any rail anchors removed by the men spacing ties, straightens any misaligned tie plates, and lines the new ties up on the line side. Behind him comes a motor car towing a spike puller and a push car loaded with new spikes. A man accompanying the push car distributes new spikes on each side of every new tie. Two men follow behind gaging and starting the spikes in the new ties. Occasionally, where incorrect track gage is

Renews Ties . . .

ADDITIONAL TIES were towed on a push car ahead of the last Gandy in case some extra ones might be needed.

A LARGE GROUP of men behind the Gandys spaced ties, applied tie plates and corrected irregular track surface.

AN I-R COMPRESSOR supplied the power by which two men with air hammers drove spikes.

THREE MULTIPLE TAMPERS, each taking every third tie, completed the tamping to uniform compaction.

. . . and Finishes Job

LEFT — New Trakliner machine, operated by two men under direction of assistant foreman.

BELOW—Group of laborers equalizes ballast and dresses up behind Trakliner machine.

found, the spike puller is used for pulling the necessary spikes and then the track is respiked to proper gage. At the rear of this unit is a 210-cfm track-mounted air compressor which powers the spike-hammers of two men engaged in driving the spikes in the new ties which have been inserted.

New Track-Lining Machine

The next unit in this organiation would normally be a lining gang of 12 men and a foreman, but on this occasion the road was using the new Trakliner, which is described in an adjoining column. This machine is manned by an operator and a laborer who position the machine and line the track with it at the direction of the foreman doing the sighting.

The Trakliner is self-propelled for movement along the rails. All four running wheels are made so that their flanges can be moved inward on the axles away from the treads, thus permitting a view of the rail being sighted for line. In operation, the two wheels on the line side have their flanges moved inward, and the two wheels on the opposite side have quickly detachable outside flanges applied to them for holding the machine on the track.

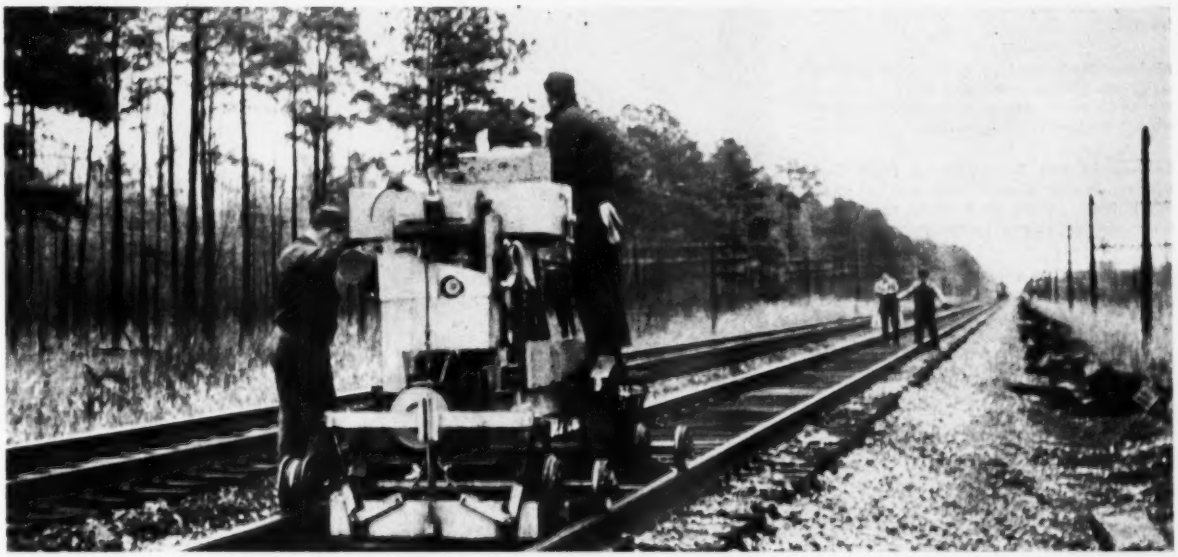
The foreman, by hand signals, has the operater move the machine to the point where lining must be done. Rail clamps at each end of the machine are then lowered and these clamp the machine to the track by gripping the undersides of the rail heads so as not to interfere with the sighting. The laborer then positions two lining shoes within the frame of the machine to fit the crib spacing. The two shoes are then pressed downward into the crib ballast by hydraulic rams, the feed pressure of which is regulated so that the machine itself and about 95 per cent of the weight of the track is carried by the two lining shoes. This eliminates most of the friction of the ties on the beds which would otherwise deter lateral movement. The track is then lined by horizontal rams, which are mounted in the lining shoes and bear against the base of the rails, and which move the track in the direction and the amount indicated by the foreman doing the sighting.

Behind the lining operation would normally be two men, equipped with hand tongs, picking up and piling the removed ties on the embankment shoulders at

proper clearance for trains to pass. But on this occasion, the road was using a Burro crane equipped with a clamshell bucket and operated by an operator and a laborer.

The last unit of this gang is a dressing gang of eight men who smooth the ballast in the cribs and on the shoulders. The track is then left to settle under traffic, after which the section forces correct any irregularities in line or surface that may have developed afterwards.

Although scheduled to progress at the rate of four miles per week, and while the work had been retarded about one mile of the expected weekly progress on account of unusually cold weather, the N&W is pleased with the performance of the combined gang organization as it is believed that, with more favorable weather, the scheduled progress will be attained.



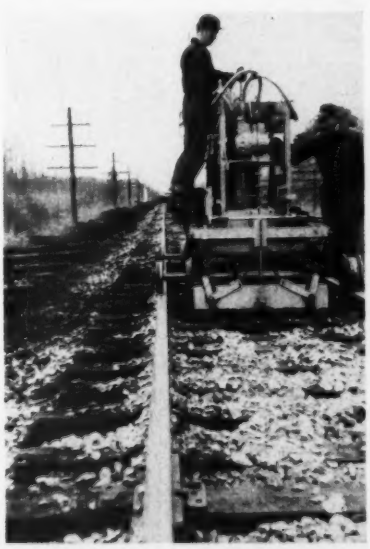
THRUST BARS in each of the two lining shoes powered by hydraulic rams exert a pressure of 5,000 lb against the base of the rail.

Design and Operation of Track-Lining Machine

The Nordberg Trakliner is track-mounted and is powered by a 12-hp two-cylinder, air-cooled gasoline engine. The traveling drive is mechanical and the lining is accomplished through hydraulic rams. Each of the four wheels is made so that the flanges can be moved away from the treads, thus exposing the gage side of the rail and about 1 in. of the rail-head surface. Each wheel is also equipped with a quick-connecting outside flange so that, when operating, only the treads on the line rail are used, and the wheels on the opposite side are then double-flanged for keeping the unit on the track.

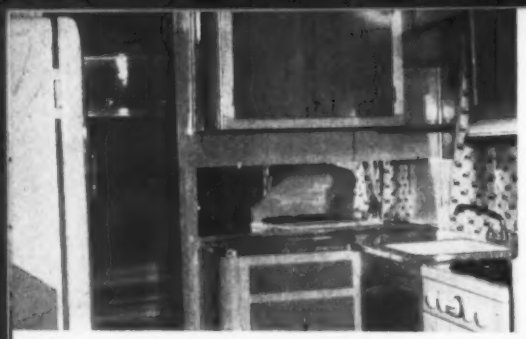
The Trakliner is operated from a platform on the control side of the machine. The controls are simple and consist of four levers. One propels the machine forward or backward at speeds up to 20 mph; another raises or lowers the two rail clamps which grip the underside of the rail head and make the unit integral with the track; another is used for raising or lowering the lining shoes which are adjustable to fit the cribs; and the fourth lever actuates the hydraulic rams which move the track either to the right or left.

When using this machine, sighting may be accomplished by eye, rail-lining instrument, or transit. The foreman doing the sighting communicates with the machine operator by hand signals for positioning the Trakliner. While the rail clamps are being lowered, the laborer positions the lining shoes over the cribs. The operator then lowers the lining shoes into the cribs by means of a double-acting vertical hydraulic ram. The thrust bars in each shoe are then moved against the rail base by two single-acting hydraulic rams, each of which exerts a force of 5,000 lb. against the rail. They have a maximum movement, either right or left, of 3½ in. at one setting. Should additional throw be required, the shoes can be reset in the same cribs, and the operation repeated as necessary.



FLANGES moved inward to expose rail.

The Trakliner is equipped with four transverse wheels for setting the machine off the track on to a tie or crib setoff.



Above—Interior view of house trailer equipped with all the conveniences of modern living including stove, refrigerator, shower, toilet and hot water heater.

Right—Highly mobile units consisting of a ¾ ton pickup truck and a 22 ft. house trailer provide gangs with fast comfortable transportation and livable quarters.

Below—Special built pick-up truck bed accommodates electric and gas welding equipment, power and hand tools and materials necessary to carry out several days work.

Mobile,

The St. Louis-San Francisco equipped its first welding gang with a truck for transportation purposes and an electric welding machine in 1949. Since that time the Frisco has continually strived to add to and improve upon the equipment supplied to these two-man mobile welding gangs. It now has 27 of its total of 33 gangs so equipped to do a variety of repair jobs—fast.

Gangs are provided with a tool car adapted from old box cars to carry a complete assortment of tools and materials.

Tool cars are specially fitted on the interior with racks, bins and shelves and a work bench for small repair jobs.

Electric welding equipment enables better maintenance of manganese steel parts on railroad crossings and switches.

A flexible shaft grinder with several special-purpose attachments is provided each gang.

Mechanized Outfits . . .

• Do Track-Welding Jobs

• Assist Rail-Laying Gangs

• Help Out in Emergencies

● Mobility, versatility, and compactness are all found in the Frisco's mechanized division track-welding gangs. These units, each consisting of a welder and a helper, are an integrated part of the maintenance-of-way operations on each division of the nine-state system. Through the use of specially designed equipment, including some types relatively new to railroad service, the Frisco has been able to increase the efficiency of its welding outfits, to provide them with more comfortable, safer and faster transportation, and to furnish them with more satisfactory living quarters.

Gangs Assigned to Roadmasters

At the present there are 27 of these mobile gangs spread over the system. Each large terminal has one or more of the units and roadmaster's track divisions have access to the gangs in accordance with the condition of the track and the density of traffic over the line. Generally speaking, each main-line roadmaster has a gang, and several branch-line roadmasters share one or more gangs among them, alternating their services from month to month. Two systems of headquartering are practiced. Gangs in or near terminals are generally headquartered there and work in all directions from that point, returning to their headquarters each night. On-line gangs are normally of the floating type which move from station to station along their assigned territory as the work warrants.

All 27 of these gangs are each equipped with a ¾-ton pickup truck and a 200 amp. air-cooled or 200 amp. water-cooled electric welding machine. Each truck is specially modified in the Frisco shop to accommodate the electric welding machine on the bed. Earlier units were supplied with a trailer for hauling the welding machine; however, experience proved that this method of handling led to difficulties in that the gang oftentimes left the trailer parked somewhere and did not have the machine available when it was needed.

Other electric welding equipment furnished each gang includes 200 ft. of 2/0 cable in 50-ft. lengths to enable various combinations of ground and lead cable, and two welding hoods. In addition to their electric welding equipment, the gangs are equipped with two complete oxyacetylene outfits. Included in each of these outfits is one of the new type oxyacetylene combination cutting and welding torches, which is reported to save considerable time and gas when changing from one operation to the other.

In addition each gang is supplied with a portable, flexible shaft type grinder with several attachments. These include accessories such as an 8-in. cup wheel for surface grinding, a 6-in. grinding wheel for removing flow at switch-points and stock rails, attachment for slotting rail ends, attachment for multi-purpose work using a 1-in. by 8-in. straight grinding wheel, and an attachment for the more accurate grinding of rail ends. Another power device available to each gang is a power

Building up of battered rail ends out of face is among duties of the two-man gangs. These views show welder at work and...

...The grinding of a welded joint, using power equipment. Dolly (not shown) is provided for moving drums along rail.

rail drill. Each outfit also has an assortment of standard welding hand tools and a supply of track hand tools, and usually a hydraulic rail bender and an expansion jack.

Live in House Trailers

One of the most important innovations of the on-line, floating-type gangs is the program in progress for furnishing a suitable house trailer as living quarters. The Frisco now has seven of these units in service and has several more on program. The trailers are modern in every respect. Each of them will accommodate two persons comfortably. A bottled-gas cooking stove, an electric refrigerator, a hot water heater, toilet and shower facilities and an oil space heater are contained in each trailer.

The trailer is towed behind the gang truck when moving from one location to another and may be parked at depots along the line, where water and electricity are supplied at company expense, or may, at the option of the men, be parked in a convenient trailer park at the employee's expense. The trucks are provided with overload springs for handling the equipment and house trailers which impose a 250-lb. bearing on the truck hitch.

Floating gangs are also furnished with a rail tool car consisting of a box car which has been specially fitted on the interior with racks, shelves and bins to accommodate gasoline and oil drums, oxygen and acetylene tanks, welding supplies, a complete assortment of frog and switch bolts and repair parts, and all of the power and hand tools. In addition each tool car contains a work bench where the men can perform repair and maintenance jobs to tools and equipment.

Maintain Rail and Switches

The main duties of these gangs are the maintenance and repair of switches, frogs, railroad crossings and rail ends, and the repair of engine wheel burns. With the advent of manganese steel in the construction of the wear and impact surfaces of turnouts and railroad crossings the job of these crews has become a particularly important one in view of the fact that such parts require frequent attention if the best service life is to be realized. Since manganese has not to date been successfully welded with gas equipment in the field, the availability of electric welding equipment becomes a necessity in order to properly maintain these parts. In addition the Frisco uses a good many heat-treated open-hearth frogs and crossings which are electric welded in line with the road's experience. The gangs now spend a great deal of time building up and slotting rail ends out of face. With the equipment formerly in use, they would have been unable to carry on such work efficiently and with the high degree of safety as is possible with present equipment.

Assist Rail-Laying Gangs

In addition to their regular maintenance jobs, the gangs play a very important role on out-of-face rail-laying projects. Here they cut off stubborn track bolts which power machines cannot loosen, remove bond wires, make rail cuts for tieing in and, where turnouts are being laid, assist in making rail cuts, bend stock rails and drill bolt holes. They often assist the track forces on these rail-laying operations by sharpening the cutter head bits of power-adzing machines, making minor repairs to tools and performing other odd jobs. They also assist track forces on new construction work and in changing out worn or defective rails on the main line. On branch line out-of-face rail-cropping operations where the Frisco does some cropping without removing the rail from the track, these units may be doubled-up to form a production-line operation. With the assistance of track forces one welding gang cuts the rail with a power saw and grinds off the rail ends and the other gang handles the drilling of new bolt holes.

The operations of these gangs are not restricted entirely to track work. On numerous occasions they aid timber bridge and building gangs with the retirement of bridges and other structures where steel cutting with an oxyacetylene torch can help the progress of the job. In retiring timber trestles the gangs are often employed to cut chord bolts and guard-rail bolts so that wooden members may be easily removed. Where reinforced-concrete and steel-frame buildings are being dismantled, the two-man units are equally effective in cutting members loose and cutting up large pieces to facilitate loading and shipment. On new construction

When laying or changing out rails and switches, frequent use is made of the power drill, which is available to each gang.

Particularly effective in emergencies because of speed and compactness, gangs are often called out at night for trouble.

and remodeling work they are very handy to have around for making metal cuts and for making electric and oxyacetylene welds.

Move About Easily

One of the most outstanding single features of these gangs is their high degree of mobility. In the old days of the bunk car it was necessary, in order to have as little lost motion as possible, to line up work in a particular vicinity a week at a time. With gangs equipped as they are now, it is not nearly so necessary to plan work far in advance in order to prevent lost time in moving from one location to another. If something important comes up in the middle of the week, or anytime as far as that is concerned, it is a simple matter for the gang to load the equipment and material needed for the job in the rear of its truck, and move with a few minutes notice.

If the job to which they are going will not take longer than that particular day, they will leave the house trailer and tool car and return that evening. However, if the work is to be of more than a day's duration, and the distance is too far to make traveling back and forth practical, they can hook up the house trailer and be on their way in a few more minutes. If the move is to be of a semi-permanent nature, that is for several days or weeks, the tool car is also billed to move on the local to the new location. As a general rule, the territories of these floating gangs are about 150 miles, more or less, in length; hence a drive of about four hours without the trailer and about five hours with the trailer will take a gang from one extremity of its territory to the other, with all supplies necessary to commence work on arrival. Such long moves, however, are usually only made in emergency or to begin some program work.

Effective in Emergencies

In emergencies the mobility and compactness of these units really pay off. More often than otherwise they are among the first gangs to arrive at the scene of trouble. In cases of broken rails, frogs, switch points or broken track fastenings their truck gets them to the trouble location quickly and with tools and supplies for making at least temporary repairs until more help can

House trailers may be parked behind depots along line where lights and water are supplied at company expense.

arrive, if the situation requires it. At derailments the welding and cutting equipment, power drill and etc. to assist in rebuilding track are all brought to the scene and are generally in use before any wrecking equipment arrives.

The railroad reports that these mobile gangs are very efficient and result in better maintenance of rail and appurtenances. A significant fact is that, according to Frisco officers, one of these gangs can be supplied with a new truck and house trailer for no more than it would cost to furnish them with an outfitted rail bunk car alone. Of course, in order to create this increased efficiency considerable investment has been necessary in additional tools and equipment in order that the gangs may better carry out their maintenance duties. It is also stated that it is the intention to continue equipping the gangs not now so equipped.

The units are under the general direction of E. L. Anderson, chief engineer. C. T. Blume, general supervisor work equipment, is in charge of purchases and maintenance of equipment, and Dave Bell, welding supervisor, instructs the gangs in the latest and best welding practices. Direct supervision and organization of the work of the gangs is handled by the division engineer through the roadmaster to which each gang is assigned.

For Most Effective Machine Use... What Kind of

What type of basic track organization lends itself best to the most efficient and effective use of mechanized equipment, and why?

A number of maintenance of way officers were requested by *Railway Track and Structures* to express their views on this subject. The participants were selected with the objective of obtaining expressions of opinion from railroads representing the several different types of organizations now in effect. Presented on these pages are the replies received.

Says Small Section Crews Needed

By W. G. Powrie
Chief Engineer, Milwaukee Road
Chicago

We have sections averaging 14.85 main track-miles in length and normally have a foreman and two to three men per section. The section crews handle the ordinary light maintenance work, including renewal of ties, spotting, changing out of defective rails, maintaining switches, and other work essential to safe operation. The section crews patrol the track as necessary except in some of the mountainous territories and terminals where track patrollers are used.

The heavy maintenance work is done by mechanized gangs. We normally have two 150-man highly mechanized rail-laying gangs. Ballasting and out-of-face surfacing work is done by 150-man gangs equipped with production tampers, dozer and dressing machines, and center and side dump ballast cars. There gangs also renew ties. Mainline division are usually provided with at least one fully mechanized 55-man tamping gang to do out-of-face work. Where tie renewals are too heavy to be economically handled with section crews, mechanized 25- to 30-man tie gangs are used.

The territory through which a railroad operates is an important factor in determining the type of basic track organization to be used. In snow territory through which we operate, there is need of some force at each station to keep switches cleaned of snow and ice and to take care of the so-called "chores."

The type of ballast used by a road is another factor to be considered. Spot-surfacing work on a road with gravel ballast can be performed economically by a section crew, whereas a mechanized gang can accomplish more where larger-size stone ballast is used.

Through the use of mechanized gangs in recent years, the condition of our track has been improved, making it possible to eliminate and extend sections.

The earnings of a road dictate how much can be spent for maintenance, and it is reasonable to believe that the higher the standard of maintenance by doing work out-of-face with mechanized gangs, the less need there is for section crews; the length of sections can be determined accordingly.

Uses District Maintenance Gangs

By E. L. Anderson
Chief Engineer, Frisco
Springfield, Mo.

After working with and experimenting with various types of organizations for several years, I am convinced that the one that we have developed, known as the district gang organization, is preferable to any other organization that we could use, considering our particular situation as to traffic and physical layout.

This basic organization consists of gangs with territories of from 32 to 60 miles of main track, including such sidings, back tracks, etc., as may exist over the section of track or district for which the gang is responsible. This means that each roadmaster or track supervisor has on his territory from 3 to 4 gangs handling all ordinary track-maintenance work.

The typical organization of such a gang includes a foreman, an assistant foreman, a truck driver-laborer and from 12 to 16 laborers. Through mechanization this personnel is sufficient to handle, without assistance, almost any type of track work. The responsibility and direction vested in one man is more efficient than several small gangs thrown together to handle similar work.

Transportation consists of a 1½ or 2-ton truck, van-type body, arranged to transport 20 to 25 men. Rail transportation consists of at least one motor car that can be used to transport the maximum portion of the gang when necessity requires and one light section or inspection car for patrolling and doing "rabbit" work. The "rabbit" work is ordinarily under the supervision of an assistant foreman. He takes with him such men as are deemed necessary for the work that he is lined up to handle. The remaining portion of the gang is with the foreman carrying on generally out-of-face work. The force available is sufficient to handle equipment that is suitable for the particular job or type of work on which they are engaged.

If it becomes desirable to split the gang up into three units on any particular day, an additional assistant foreman can be picked from the gang and instructed to do whatever is necessary. Ordinarily one small "rabbit" or patrol gang is able to handle all the odds and ends and in addition assist the major portion of the gang at various periods in some phase of work where it is desirable to have all the man-power of the gang. Such an arrangement gives flexibility as to the size of force. Furthermore the force isn't so large but that one man can efficiently supervise it.

You will note that a roadmaster or supervisor has a maximum of four gangs under his supervision. From that it can readily be seen the roadmaster's difficulties in contact-

Basic Maintenance Organization?

Nine top-ranking maintenance officers express their views on a question of outstanding importance today

ing his foremen, discussing with them the problems that they have, and lining up and programming their work, is much simplified over what he would have with a straight section-gang organization.

This question has often been asked in connection with this type organization: How are situations handled in case of storms where it is necessary to put out men to flange out crossings, keep switches open, etc. In general we have found that it is less difficult to get men out where truck transportation is available than it would be where only motor cars are used. If the conditions become too severe, men can be placed on trains to handle whatever work is necessary to permit the train to move over the line with a minimum of delay.

In case of emergency, such as washouts and derailments, forces are available to move quickly to the point where needed and are on the job generally in a much shorter time than was ever possible with motor cars or handling on wrecking or work trains.

We endeavor to do most of our lining and surfacing on an out-of-face program with the number of men outlined above; sufficient force is available to handle any surfacing operation unless it involves heavy tie renewals. Surfacing with light tie renewals is being carried out with these gangs continuously. Many of our small miscellaneous rail jobs are handled with these gangs using mechanized equipment.

Prefers Section and Extra Gangs

By R. W. PUTNAM

Engineer Maintenance of Way and Structures, Southern Pacific, San Francisco

We must confess that we do not consider that an organization should be changed in its basic concepts to utilize a piece of equipment, or several machines. It is our opinion that good maintenance can only be assured by a sufficient number of trained employees, adequately tooled and machine equipped, and, most important of all, strategically located to keep up the property in an efficient manner. Obviously the standards adopted, density and character of traffic, topography, climatic conditions, labor supply, and operating allowances predetermine the number of trackmen that must or can be employed. It is our further belief that good and ample supervision is a cheap commodity in the market of high labor and material costs. Consequently, on the Southern Pacific we choose the section-gang and extra-gang setup to avail ourselves of closer foremen supervision dispersed over a wider territory.

Machines and equipment are made to fit our organization, rather than the reverse. To design an organization around machinery to us appears analogous to the "tail wagging the dog," and we seriously doubt we would change our basic organization through the acquisition of any equipment.

Our main-line sections average 11 to 12 miles of single track, or 7 miles of double track, with additional back-track mileages. Branch-line sections average 18 to 20 miles, with a few extending to 30 miles. Besides their regular tools, sections have either forks, spiking guns or pavement breakers. They also are furnished, as occasion requires, with a power drill, power saw, power wrench, crosscut grinder, joint oiler and tie-pusher-outer. The motor car is the common means of transportation, although many section gangs also have a pickup truck.

Extra gangs are created for handling all heavy jobs; i.e., rail relays, transposing, "back work" under rail programs, surfacing, ballasting, new track construction, including some industry work, roadway crossing rehabilitation, etc. On mountain districts extra gangs fight snow and ice. Extra gangs are equipped with such machines and equipment as are best suited to the work assigned to the gang.

Reasons for sticking with the section gangs and extra gangs appear to us to be fundamental. A few of the readily apparent ad-

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"Mechanized equipment is justified when its use will step up production and will result in savings in maintenance costs. Mechanized equipment should be used in a gang of sufficient size to get the maximum utilization out of the equipment. While a large portion of maintenance can be handled by mechanized gangs, there is need for small section crews to handle light maintenance work where a larger mechanized gang cannot be justified."—W. G. Powrie

"Some of the outstanding advantages of the district-gang organization are: Mobility of gang, flexibility of gang personnel, increased efficiency of supervision, high percentage of productive hours worked, greater efficiency of gang organization trained to work as a unit with equipment, and programmed preventive instead of unprogrammed corrective maintenance."—E. L. Anderson

"There are innumerable extra-curricula chores demanded of the track force which only the section gang can effectively handle. All such jobs are of such a nature that it is not economical to have them done by a district gang. Even a smaller gang belonging to the district gang could not effectively handle them, since many of the jobs are, or should be, carried on across the district at many locations simultaneously."—R. W. Putnam

"The use of highly specialized gangs with a constant personnel, equipped with the best modern tools and equipment available, to take over such tasks formerly handled, at least in part, by the section or district gangs appears to offer one of the most efficient and effective ways of utilizing mechanized equipment."—R. H. Beeder

What Kind of Basic Organization? (cont'd)

vantages of this organization are:

1. Knowledge of local track conditions is almost as important as a knowledge of track work. Thus a section foreman with a reasonable mileage soon learns where all the trouble spots are. Furthermore, it is possible for him to get over his section frequently enough to take care of the conditions. This is particularly true during times of storms or unusual occurrences requiring patrols.

2. Time in transit is held to a minimum. Even under ideal conditions as much as 3 hr. daily are lost due to highway travel when the gang has to go 40 to 50 miles as in the case of district gangs. Likewise the district gang sustains a proportionately larger period of non-production because of machine or human disability.

3. Right of way can be kept cleaner when the foreman has an opportunity to cover his shorter section more often. Also, there is less risk of unauthorized encroachments on, or "borrowing" of, railroad property.

4. In event of discovery of defective equipment at terminals, wider coverage is afforded by numerous sections, which tends to minimize delays due to track inspection and subsequent train delay pending reporting of conditions found during inspection. The value of employees' making rolling inspections of trains should not be overlooked nor discounted.

5. Smaller gangs enjoy better flexibility and are able to adapt themselves more readily when emergencies arise or when outside causes interrupt plans for the day.

6. The opportunity for discovering and developing qualified personnel increases in direct ratio to the number of foreman positions.

7. A better quality of work usually results from closer personal attention to detail made possible through increased supervision.

We do not take issue with our neighbors' organizations. Obviously they have satisfied themselves that controlling factors support their setup. But we sincerely feel that our organization is the best one for our purpose, and it is our plan, for the present at least, to continue it. Meanwhile, we are constantly striving to improve our railroad by the use of new machines, devices or methods which might be introduced.

Simple Answer Is Unrealistic

By R. H. Beeder

Assistant Chief Engineer
Santa Fe System, Chicago

Any attempt to enumerate one or two basic types of track organizations that might be best adapted to the most efficient use of mechanized equipment would be an over-simplification. In doing so, one would be guilty of taking a highly complex question and endeavoring to come up with an unrealistically simple answer. I am sure there are a great many types of track organizations that can effectively use mechanized tools and equipment, and among these would be included the average section gang with 10 to 20 track-miles of territory.

The expanded use of the "district gang" would afford an excellent example of the type of track organization that uses mechanized tools in a most effective way. But one cannot just say "Let's go to district gangs." There are always some especially selected territories that fit ideally into the characteristics of the district gang, but several factors should be weighed carefully in advance, as follows:

1. How are the roads? If the territory is not adequately served by highways, especially in the regions of heavy rainfall, the district gang with a truck and an assignment of about fifty miles of track will find itself on a motor car most of the time and just be an ordinary section gang with a "whale of a long territory."

2. How is the stability of the roadbed? A district-gang type of organization cannot work to advantage on a territory afflicted with numerous soft spots that the gang would have to fix once a week or oftener. This is a factor that can be corrected by roadbed stabilization, by grouting, by pole driving or by one of the other less common methods.

3. What is the maximum speed of trains? I am sure a district gang can operate with more success on a territory where the maximum speed of passenger trains is 70 mph than on one where the maximum speed is 90 mph. Small alternate cross-level defects can jointly conspire toward an uncomfortable wallop at some of the higher speeds and dictate a better standard of maintenance than would normally result from a district gang serving a long territory.

4. How is the physical condition of the track structure, including the rail, ties and ballast? If a district gang is to keep abreast of the work, even with the help of modern mechanized equipment, there should be little or no so-called "deferred" maintenance on its territory.

Other types of highly specialized gangs equipped with modern tools should also be considered and used where conditions justify. Of primary importance among such gangs would be mechanized tie-renewal gangs, with at least divisional range, to remove the burden of this task from the district or section

"Section gangs are being retained in our basic organization. However, they are relieved as much as possible from participation in heavy maintenance work. This allows the section gangs complete freedom to engage in the important phases of work involving inspection and patrol and the detection and correction of minor maintenance deficiencies. We feel that these details can be handled most efficiently and economically by small gangs."—J. P. Hiltz, Jr.

"We have for the most part retained the basic organization of track sections and special gangs with such modifications as the use of heavier and improved materials, mechanization of many operations, the 40-hr. work week and other developments have made practicable and economical. Adjustments in assigned territories and changes in functions of gangs follow closely any changes in physical conditions or development of improved methods that can be adopted to advantage."—A. B. Chaney

forces and reap the benefit of savings accruing through the use of any of the several types of machines now available for tie-renewal work. Even though it is economical to renew ties in an out-of-face surfacing operation, the cycle of surfacing programs in many cases will be considerably longer than the cycle that should be adopted for tie-renewal programs in the interest of economy. Therefore, there is always a place for the mechanized tie-renewal gang in these intermediate cycles between surfacing raises.

The tendency to postpone tie renewals until a surfacing raise is made and then make very heavy spot renewals is not good economy, as track forces remove ties that have several remaining years of life, and every year of life in a tie is worth about twenty cents. Other hidden losses would include the partial destruction of good or fair ties in their attempt to carry more than their share of the load due to extremely poor neighboring ties awaiting a surfacing raise for renewal. Passing over trackage with a mechanized tie-renewal gang every two or three years, making moderate spot tie renewals at cheaper unit costs than renewal by section or district gangs, would eliminate many of these losses. Other specialized gangs should be organized for rail laying, rail lubrication, rail-joint lubrication, weed eradication, embankment restoration and cut cleaning, roadbed grouting and other similar operations to assist the over-all maintenance program.

Retains Section Gangs, but —

By J. P. Hiltz, Jr.
Chief Engineer—Maintenance of Way
New York Central System, New York

On any particular property, before deciding upon what type of basic track organization lends itself best to the most efficient and effective use of mechanized equipment, many factors must be considered. The most important of these are:

1. The geographical location of the property (with respect to climatic and correlated conditions).
2. The density, speed and character of the traffic on the property.
3. Whether or not the property is essentially a single-, double- or multiple-track system.
4. The condition of the property with respect to deferred maintenance.

After considering these and other factors on the New York Central System, it has been decided that, to the extent possible, heavy track maintenance work will be done by large mechanized gangs which will specialize in the particular type of work to be done.

We are of the opinion that such a basic organization, retaining section gangs, allows for the heavy maintenance gang to continue its operations without being interrupted by minor maintenance requirements, and results in the maximum use of machinery and equipment, with resultant maximum production. It further provides the manpower and facilities necessary for the all important work of attending to details, including inspection and patrol.

Emphasizes Role of Special Gangs

By A. B. Chaney
Assistant Chief Engineer
System-Maintenance
Missouri Pacific, St. Louis

Any track organization is workable that permits application of the required man-hours on productive work for adequate maintenance. The question resolves itself into the selection of a type of organization that is most economical. It would not be prudent to set up a fixed organization for all the diverse conditions existing on North American railroads. The most economical organization plan for any property depends upon many factors, such as physical characteristics, kind of track and roadbed, train speeds and the requirements of traffic to be moved over the road.

Track-work machines can best be utilized by the special or larger gangs on work that has been carefully programmed. For several years past the trend has been to depend more and more on such gangs for out-of-face surfacing, rail laying, track construction and similar heavy work. Special gangs normally devote their entire working time to a single over-all task and can thereby make greater use of mechanized equipment. The section or small-sized gang has many diverse assignments and can seldom remain at a single task a sufficient length of time to make capacity use of many types of power equipment.

The section gang is assigned to the lighter, routine, but essential work of patrolling, protecting, inspecting, spotting, repairing fences and crossings and the hundred and one other chores that are ever-present. This type of work is best taken care of by small gangs of three to five men. Such gangs are provided with track motor cars, power spot

What Kind of Basic Organization? (cont'd)

tampers, drills, saws and similar power tools when their use is justified. Power mowers are made available for cutting right of way. In the larger terminals, trucks are used in handling materials and in some cases they may transport gangs. As a rule, section gangs stay on the track. These gangs make spot tie renewals, and unload most of the ties for renewals.

Specialized track gangs generally consist of from 10 to 50 men and are set up as follows:

(a) Rail-laying gangs (system).

(b) Ballasting and surfacing (division).

1. Tie-renewal gang
2. Tamper gang
3. Ballast equalizing unit (machine)

(c) Track construction gangs, new work (division).

(d) Welding gangs (district and division).

(e) Stabilization gangs (division).

(f) Grading gangs (system).

(g) Scaling gangs (division).

The specialized gang of today was developed from the extra gang of former years. Mechanization and other developments have made it desirable to employ many specialized gangs the entire year. Where applicable, motor vehicles are used for the transportation of men and materials. The judicious use of suitable motor vehicles on highways increases productive hours, but such equipment can seldom be justified in territories without enough parallel and access roads or on medium and light traffic lines where the alinement has few obscure curves. The mechanization of special gangs is given constant study and any worth while developments are promptly adopted.

Cites Affect of Geography

By B. Blowers
Chief Engineer, Erie
Cleveland, Ohio

The inauguration of the five-day work week for M/W forces has brought about, in some cases, revision or reorganization of forces to the extent that section and extra-gang forces have given way to district and system gangs on some railroads. This, it seems, is also part of the trend to mechanization of forces. In many cases, it was the result of high density of traffic as well as the five-day work week. In either event, it is connected closely with economies to be derived by the use of machines to offset the increased costs inflicted by the five-day work week.

Mechanized track equipment has to have room for safe movement and ease of operation. In multiple-track layouts at certain times track can usually be removed from service and turned over to the M/W department for a period each day for the economical use of on-track equipment. At the close of the day room must be available to set the equipment off, or track facilities close by should be available for "clearing up" without loss of time. We, on the Erie, have been able to enjoy these privileges and develop the economies, which are many, and have greatly benefitted from this type of work.

From a maintenance standpoint we are tied down in many places geographically for long distances, which limits continuous contact for our track gangs by automotive transportation for use of district or system-type track gangs to facilitate economical use of mechanized track equipment to the fullest.

On our small sections the use of individual mechanical tampers and other individual power tools for performing routine work, such as surfacing and lining, mowing right of way, etc., augmented during working seasons with large mechanized gangs for rail laying and out-of-face ballast work, have proven extremely economical and quite satisfactory.

Another extremely important factor is the seasonal weather conditions encountered in extremes ranging from heavy snow and ice storms in winter to heavy rain and wind storms in summer. Our small sections are able to give the track complete patrol under these conditions, giving maximum protection to interlockings in snow and ice storms and to bridges, culverts and track ditches during times of heavy rains and high water, resulting in a minimum of delay to our high-speed freight and passenger service. We feel this service could not be protected with large district gangs.

Describes Revamped Organization

By J. T. Fitzgerald
Engineer Maintenance of Way
Rock Island, Chicago

Slightly over four years ago the Rock Island put into effect a new type of track organization in order to utilize mechanized equipment and to secure more efficient and economical maintenance of the property. The following steps were taken:

1. Roadmasters' territories were shortened to permit the roadmaster to have direct contact with his section foremen.

2. Track supervisor positions were abolished in line with No. 1.

3. Section foremen were held responsible for proper track and roadway inspection on their respective territories. Section foremen were in general assigned two men, so that they could make a running correction and do the required chore work.

4. Section limits were increased.

5. Maintenance gangs were established on each roadmasters' territory to handle the larger jobs of track maintenance such as surfacing, tie renewals, realining curves including surfacing, and replacement of rail from condemned heats, and to be available for use as extra forces at terminals during storm periods.

These maintenance gangs were equipped with trucks where parallel highways are available. Bunk cars were assigned for their use, the bunk car being the headquarters of the gang. They were also equipped with four-tool tampers as part of their regular equipment. Tie saws are assigned to these units during periods when heavy tie renewals are made. Bolting machines, power adzers and rail-relay machines, either Parsons or Meco, are furnished when rail handling warrants their use. The force on these gangs varies from 7 to 20 men, according to the amount of programmed work.

"We have been studying the district or system gang organizations and presently feel that the success of these systems is due to the ability to utilize the gangs completely. This is entirely dependent upon the ability of such a gang to get to the point involved without delay to start the day's work. It is felt that running long distances in trucks and transferring to gang motor cars to complete a trip is decidedly uneconomical and has other disadvantages."—B. Blowers

"Generally, a gang of about 15 men can economically use the power tools and machinery now available. It is also believed that the major portion of constructive maintenance work can be performed with gangs of 12 to 15 men working as a unit separately or as a unit combined with other such units in a larger force determined by the nature of the job under execution."—C. J. Geyer

The assignment of maintenance gangs has provided more stable employment for track forces on an average throughout the year. Instead of expanding section gangs temporarily during the working season for tie insertions and minor surfacing, the necessary expansion is made in the maintenance gangs so that fewer temporary employees are required. Because bunk cars are available for housing them temporary men can be secured at most all places at the time required to do the work. This is quite beneficial for the reason that during the past 14 years there has been practically no labor available at many of the old section headquarters to expand the local section when seasonal force increase has been required.

In general, this revised organization has worked out fairly well to achieve more efficient and economical maintenance. The best results have been secured on secondary and branch lines where there is less train interference to the work.

The results with regard to the main line are somewhat different. There were too many small gangs doing surfacing work at the same time too close together, and the number and duration of slow orders was objectionable to good train operation. Section forces, due to train interference, required an excessive amount of time for patrolling their track, with the result that a great number of joints were not given required attention and frequently where given the work was not complete with regard to line.

In order to improve upon track maintenance on the main line, track supervisors have been restored to a large portion of the main lines where higher speeds prevail. The number of maintenance gangs has been slightly reduced on the basis of doing more surfacing work with large extra gangs, in order to do required surfacing in a shorter length of time, and to more effectively secure the available output of power jacks and larger power tamping units.

This change will permit section gangs to devote more time to maintaining required rail surface and line more nearly at the time required, as well as the assignment of additional section laborers to the gangs as may be needed to perform their particular work.

Offers Three-Part Basic Set-Up

By C. J. Geyer
Vice-President
Construction and Maintenance
Chesapeake & Ohio, Huntington, W. Va.

It must be recognized that our track and roadway facilities today are far stronger and do not require in every part the day-to-day inspection and care required years ago. It must also be recognized that maintenance requirements of the current period have very little relationship to current traffic. The need for current maintenance has been brought about by the policies and traffic of past years. Therefore, railroad maintenance expenditures should be set up in annual budget form rather than on the basis of month-to-month allowances determined by the estimated earnings for particular months. An annual budget will permit an orderly programming of work over the entire year and the planning of each unit of work for that time in the year in which it can be done most economically. It also permits the orderly organization of gangs and the working to a greater or lesser extent of uniform gangs. It must be recognized that planning and orderly maintenance performance throughout the year are bound to result in a lower cost than if work is planned on a month-to-month basis.

It is, therefore, the opinion of the writer that the first basic principle in organization for the most effective present-day maintenance is use of an annual budget prepared after a careful inspection of current needs. The inspection will also provide the basis for setting up a plan and timetable program.

The second step in basic organization is gang arrangement. It is obvious that if a major part of maintenance work is to be performed by small section gangs, such work will be done by hand because it is not economical, or even practical, to supply such gangs with the power tools and machinery now available.

The third part of the basic organization is an organization that will most effectively care for the large number of necessary jobs generally considered as one-or-two-man jobs. This includes such work as inspection or adjustment of switches, care of road crossings and flangeways, cleaning ditches and drain pipes, and many other such jobs that can and are most effectively performed with hand tools and very few men. It is further believed this part of the basic organization can best be performed by a foreman and two or three men assigned to a territory varying in length in accordance with the units of property in a given mileage.

Summarizing, the basic organization is:

1. An annual budget prepared from an inspection of maintenance needs and on the basis of a timetable program.

2. Gang units of 12 to 15 men working separately or as a combined force and performing all the major maintenance work.

3. Small units each consisting of a foreman or maintainer, with two or three assistants or laborers, to perform the one-man hand-tool jobs.

Maintains Special Shop for . . .

By centralizing the heavy-repair and overhaul work on its off-track work equipment in one system shop, the railroad has made it possible to return these units to active service much faster than formerly when this work was handled separately on five general roadmasters' territories. Shop is equipped with testing devices for analyzing electrical difficulties and with modern machinery and tools for expediting the work.

. . . Off-Track Machines

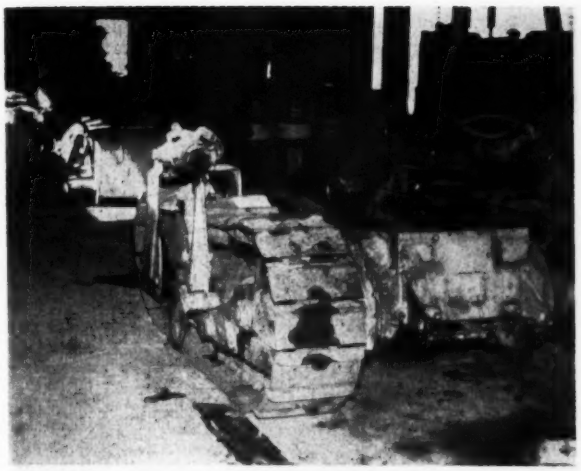
● The mechanics working in the Atlantic Coast Line's system shop for the repair of off-track work equipment at Savannah, Ga., state that no matter what type of unit it is, if it is broken they'll fix it; and if it needs overhauling, they'll clean, service and restore it to its former capacity. Apparently this is not idle boasting because the shop is well equipped with testing devices, machinery and spare parts to clean, service and repair both on-and-off-track work equipment.

Prior to the use of this modern shop, the repairs to the off-track units were handled separately on the territories of the road's five general roadmasters, each of whom employed from one to five mechanics and their helpers. However, the railroad noted that much of the same type of work was being duplicated on the various territories, and also that some of the required work was beyond the capabilities of the mechanics because of the lack of special machinery and tools. As a result, a lot of the specialized repair work had to be sent to commercial shops and paid for at the prevailing prices. Furthermore, as more and more units of equipment were acquired by the railroad, the problem of making prompt repairs became acute and the machines were out of service for a longer time than the railroad cared to spare them.

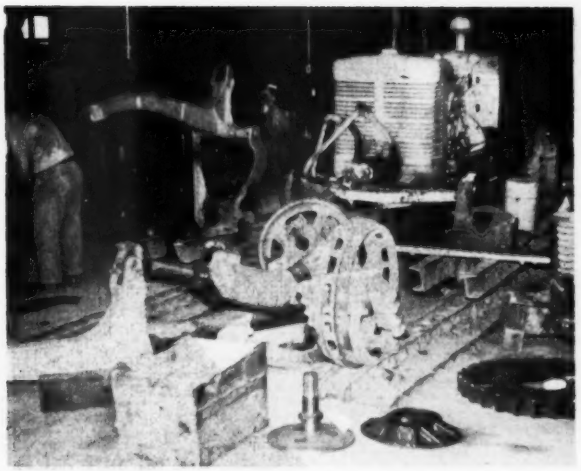
Shop and Machinery

This led to the decision to centralize the work in one system shop, and to equip it with all of the tools and machines necessary for expediting the repairs. Savannah was selected as the site for this shop because it is a division point easily reached from all other points on the railroad. Also, the city is a point at which many manufacturers have distributing agencies where spare parts for their machines may be readily obtained, thus obviating the need for the railroad to maintain an expensive parts inventory.

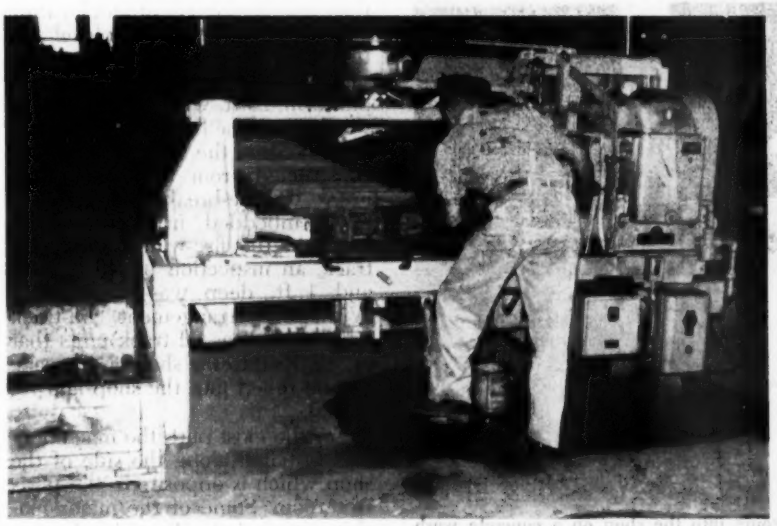
About a year ago the shop was established at that point in an area, approximately 112 ft. wide by 160 ft. long, at one end of a vacant railroad-owned fertilizer warehouse, which is served by a track on each side. The building is of typical warehouse construction having wood siding and creosoted timber posts, beams and roof deck. A



CRAWLER-TYPE equipment, when shipped to Savannah for general overhaul, is brought into the shop where . . .



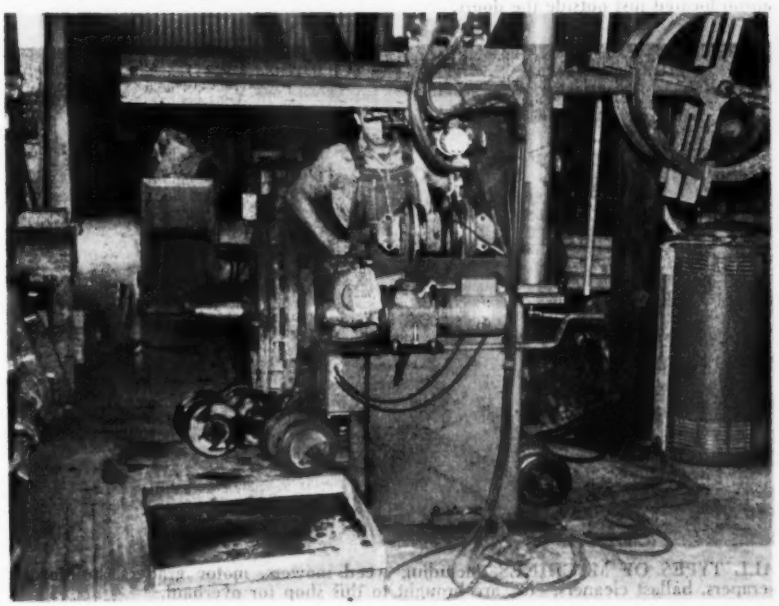
IT IS COMPLETELY DISMANTLED and the parts, now strewn around a full bay, are cleaned, repaired or renewed.



Crawler Machines Receive Special Treatment

LEFT—The Rodgers 150-ton track press, a machine not ordinarily seen in work equipment shops, enables mechanics to force pins and bushings out of track shoes so that they can be renewed or repaired. This machine is also used to reinsert the pins and bushings and insure a tight force fit.

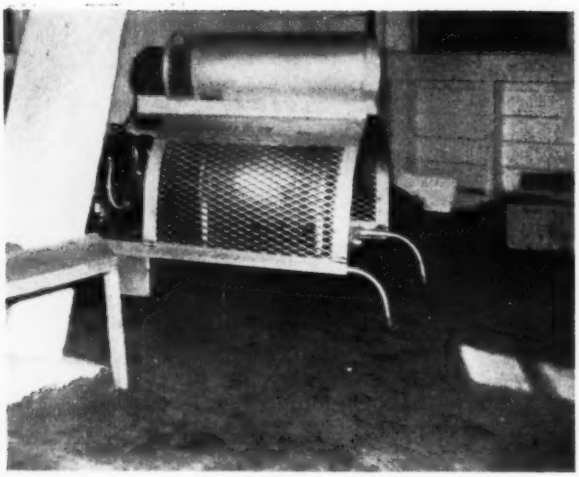
BELOW—The wearing surfaces of tractor track rollers are built up by means of this Leader automatic electric welder.



fire-break wall was erected which separated the shop from the warehouse area. A concrete floor, 8 in. thick, was laid in the shop area and was sloped to a line of drains along the center of the shop to provide good drainage while being flushed with a hose. Offices for the shop supervisor and the general supervisor of work equipment, a parts storeroom, and a locker-and-wash room were partitioned off on one side of the shop, and windows were installed in the warehouse sidewalls.

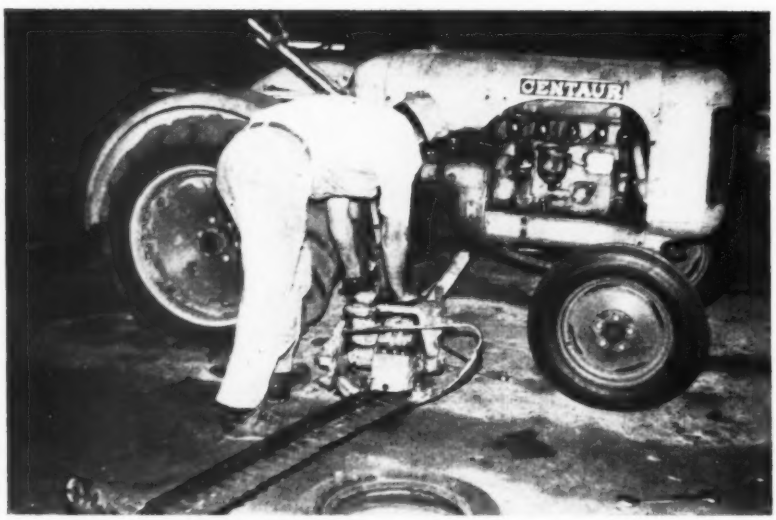
Two large door openings were installed in the south endwall of the shop. One, 20 ft. wide by 16 ft. high, is served by an outside ramp so the off-track units can be moved under their own power in and out of the shop from and to an outside storage area. The other, 15 ft. wide by 16 ft. high, is served by a new track which is stub-ended at the

ENGINES ARE CLEANED of grease and oils by a detergent-saturated steam furnished by a Speedylectric steam-jet cleaner.



WORK AREAS ARE HEATED by several portable Silent Glow heaters, each having an output of 168,000 Btu per hour.

ALL MACHINES ARE CLEANED before going into the shop on a concrete wash apron located just outside the doors.



ALL TYPES OF MACHINES, including weed mowers, motor graders, bulldozers, scrapers, ballast cleaners, etc., are brought to this shop for overhaul.

door opening and is at an elevation which places the car-floor level and the building-floor level at about the same plane. A concrete washing platform, 20 ft. wide by 40 ft. long, was built at the building end of this track. Within the shop, a track was constructed from the door opening to the fire-break wall, with the rails embedded in the concrete floor. At the fire-wall end of this track, an inspection pit 40 ft. long and 4 ft. deep was constructed. With this arrangement, on-track units as well as off-track units that are shipped to the shop on flat cars, can be rolled into the shop and repaired.

For the most part, the machinery was installed along the side of the shop which is opposite to the parts storeroom. Some of the major machines included a Precision honing machine, a Kwick-Way piston grinding machine, a Delta standard-type electric drill, a Bacharash test pump and fixture, a Kwick-Way valve-refacing machine, a Leader automatic electric welder, a Rodgers 150-ton track press, a hydraulic gear puller and press, an Atlas quick-change lathe, an Allen motor tester, and an Electrode steam boiler, plus various common and special hand tools as well as lifting devices, such as a roller-mounted straddle crane hoist, hydraulic lifts and jacks.

Two of the machines that are particularly noteworthy are the 150-ton track press and the automatic electric welder, as they enable the tracks, treads, and roller mechanisms of crawler-mounted equipment to be repaired. The tracks are removed from this equipment and taken to the press where the pins and bushings are forced

ELECTRICAL SECTION includes Allen tester to assist in trouble shooting.

out of the track shoes. When possible, the pins and rollers are built up by the automatic welder, then are machined and later forced back into place by the press. These machines have effected a substantial savings over the former maintenance organization when such work had to be done in commercial shops, and they save considerable delay in getting the units back in service.

The motor tester also is very helpful in speeding up gasoline-engine reconditioning. By this device the engine trouble can be quickly spotted, whether it be too poor or too rich a gasoline mix; defective coils, condensers, or timers; or incorrect vacuum pressure, voltage or amperage.

A Jaeger 205-cfm air compressor supplies air to outlets which are located on alternate posts so that every bay within the shop area has a source of compressed air readily available. Also, every post has a drop line with a receptacle for electric current, and, by alternating the 110-volt and 220-volt lines, each bay has both voltages within easy reach.

Although located in the southern section of the Temperate Zone where prolonged cold snaps do not obtain, there are times when the shop must be heated for the comfort of the workmen. Heat is provided by five Silent Glow portable heaters, each of which is capable of producing 168,000 Btu. an hour. They burn ordinary diesel fuel oil and have an automatic electric igniter, an electric fuel-oil pump and an electric fan. Being portable, these heaters are easily moved around the shop to the areas where the men are working, and avoid the waste of heat that would result from a fixed-type heating system installed to heat such a high-roofed area.

Shop Employees

The shop employs 18 mechanics, 7 helpers, 2 laborers, and 2 clerks, who work under the supervision of R. Perry, assistant general supervisor of work equipment, and under the direction of I. M. Boone, general supervisor of work equipment. For the most part the mechanics and helpers are men who, under the previous equipment-maintenance system, formerly worked under the five general roadmasters, while some are former water-service employees whose work was largely nullified by the road's acquisition of diesel power.

A few of the men are specialists in certain types of work. One man is assigned altogether to the fixing of carburetors, magnetos, starters, and all electrical work, and he works in one corner of the machine-shop area. A few others are experts on the repair of gasoline and diesel engines and on welding repairs. However, in general the men are good all-around mechanics. They have to be because they must know how to service, repair and overhaul machines of various manufacture.

They must be able to repair and recondition any of 69 bulldozers, 38 draglines, 12 motor graders, 35 scrapers, 2 power shovels, and 63 ballast cleaning machines—many of different manufacture—that may come to the shop. In addition they must repair other machines and appliances such as tampers, adzers, mowers, air compressors, bolt tighteners, buckets, concrete mixers, cranes, cribbing machines, tie cutters, ditchers, drills, spike drivers and pullers, rail saws, grinders for various purposes, magnets, planers, and power jacks. Even highway vehicles, such as panel trucks, pick-up trucks, dump trucks and self-loading trucks are sent to this shop for repair and overhaul.

A complete record of every one of these machines is maintained in the shop office of the general supervisor of work equipment. This record not only includes a complete description of the machine, its model, manufacture, date purchased, cost, and such statistics, but also shows a running record of the repairs made, parts installed, as well as where the machine was worked. This record not only helps in determining the work efficiency of each machine, but also assists in controlling the parts inventory of the storeroom.

Preventive Maintenance

Although the ACL has established this shop for the repair and overhaul of its work equipment, the railroad also established a means for servicing and making minor repairs in the field so that machines will be kept out of the system shop.

A traveling mechanic has been assigned to each one of the five general roadmasters' territories. These mechanics each have a helper and are assigned a ½-ton panel truck. The trucks are equipped with hydraulic gear pullers, nozzle testers for checking injector pumps, and all the small hand tools, such as vices, wrench sets, etc., that may be required. They also carry supplies of spare parts that can be used for making minor repairs.

The traveling mechanics work under the direction of the general roadmasters. When a machine operator is having trouble with his machine, he reports it to the general roadmaster, who in turn, dispatches the traveling mechanic and his helper to the machine location. These men make the necessary adjustments or minor repairs. If a new part is needed, the mechanic calls the system shop on the telephone and the part is shipped out on the same day. If major repairs are necessary, the machine is then shipped to the shop.

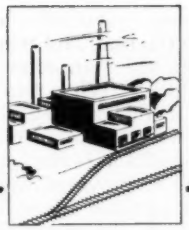
Another means of preventive maintenance is the training of the machine operators. This is one of the responsibilities of the road's assistant supervisor of work equipment, who travels around the railroad and instructs the operators on the proper care of their machines.

FROM TUNNEL TO SNOWSHED — That is the story told by the photographs above and at the left. Because of frost action, the barrel of the Canadian Pacific's 570-ft. Palliser tunnel was being subjected to excessive pressure. Accordingly, a project was started to "daylight" the tunnel, but after the overburden had been removed it was decided to retain the barrel as a snowshed. Maximum depth of cut is 185 ft. Mannix, Ltd., did the job using tractor-scrapers and a dragline.

R. L. HANSEN is the first man to travel the length (5,133 miles) of the Southern Pacific Company's Pacific Lines by motor car. In making the trip he stopped at every turnout to test the rails and trackwork for defects with an Audigage.

News Briefs in Pictures . . .

TRACK MACHINES of the Kershaw Manufacturing Company, Montgomery, Ala., were demonstrated to about 35 railroad men on January 20. The guests also took part in an open house in dedication of Kershaw's new plant. The machines shown included the Jack-All (left), tie replacer (right), ballast regulator, track crane, utility derrick, track jack, and track broom.



PRODUCTS OF MANUFACTURERS . . .

. . . new, improved equipment, materials, devices

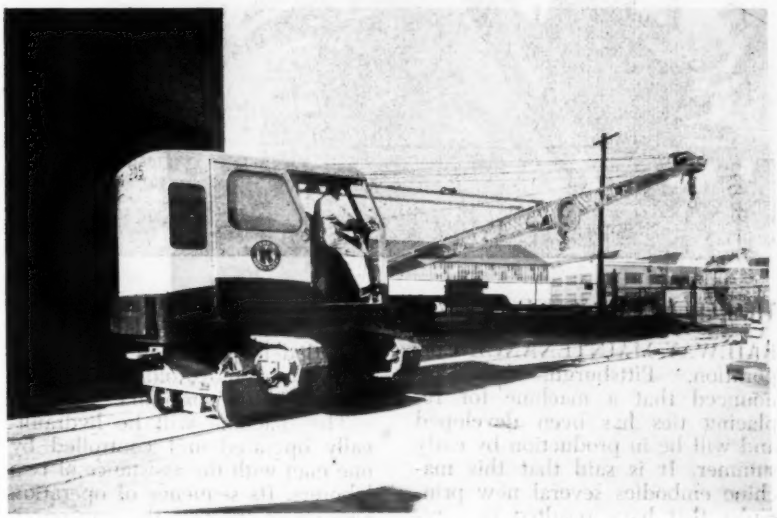
PACKAGED CHIMNEY

VAN PACKER Corporation, Chicago, is introducing into the railway field a light-weight masonry chimney in packaged form which, it is said, may be set up in 3 man-hours or less for the average installation. It is reported that this chimney is applicable either as a new or replacement unit on small freight and passenger stations, maintenance-of-way buildings, car-repair shops and diesel-repair shops. The complete package contains the chimney support, chimney sections, joint cement, chimney housing, housing cap, chimney pot and accessories, with nothing else to provide.

VAN-PACKER masonry chimney showing section-on-section assembly.

Each chimney section is composed of an acid-proof fire clay tile inner lining enclosed in a 3-in. vermiculite concrete wall with an asbestos-cement outer jacket. In tests conducted by the Underwriters' Laboratories, these chimney sections have withstood temperatures in excess of 2000 deg. They are listed for all fuels by the Underwriters' Laboratories and the American Gas Association.

In installing a chimney, the first chimney section is placed in the chimney support and may be located directly over the heating unit to conserve space. This chimney support consists of heavy iron straps preshaped to the contour of the chimney and are nailed to the ceiling joists or beams. Chimney sections, available in 1- and 2-ft. lengths, are then added until the desired height is reached. These sections are joined with acid-proof, leak-proof, thermal-setting joint cement. The housing cap is then added and the chimney pot set in place. A refractory rain cap is available in the package if desired. Two chimney housings are available. They include one of aluminum 14¼ in. wide and 18½ in. deep when installed, and a cement-asbestos "brick panel" housing embossed and painted brick red with natural mortar lines, which measures 16 in. wide by 24 in. deep.

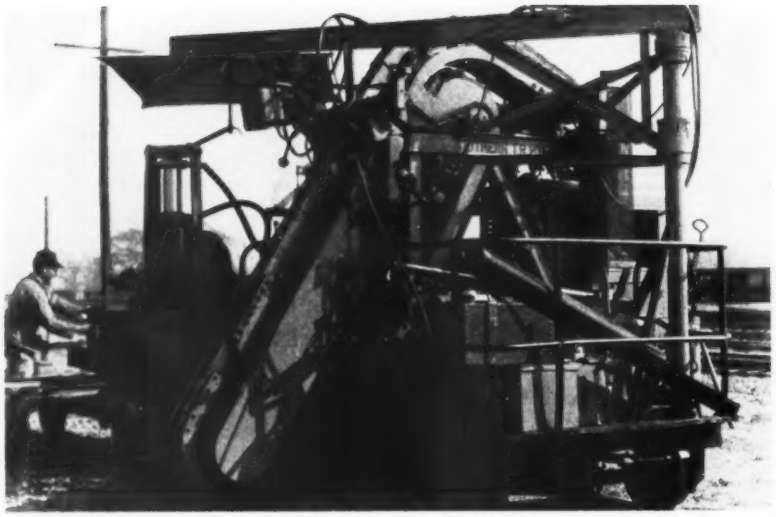


IMPROVED RAIL PROPULSION CAR

THE KOEHRING Company, Milwaukee, has recently announced several improvements to its railroad propulsion car for use with the Model 205 excavator. The new car in the RailAid combination now features four-wheel drive; air-operated, self-equalizing, internal, expanding shoe brakes on all wheels; and a parking brake. Lifting capacity has been increased on the crane to 6.9 tons on the car and 8.9 tons on the ground.

Other new features for contributing to better performance include: a maximum speed of 20 mph, lighter car weight, reduced height of car platform, internal gear coupling and an improved universal joint in the power transmission. The car is now able to handle excavators with various size crawler shoes up to 24 in.; ramps for loading and unloading are attached ith simple hooks; and toggle-type quicking-acting locks are used to stop and center the machine and fasten the crawlers in place on the platform.

Optional attachments for the car include locomotive couplers with MCB contour lines, which will intercouple with other couplers having full size MCB, AAR 10 and AAR 10-A contours. The lower air line is protected by dummy coupling when not in use.



TIE REPLACER

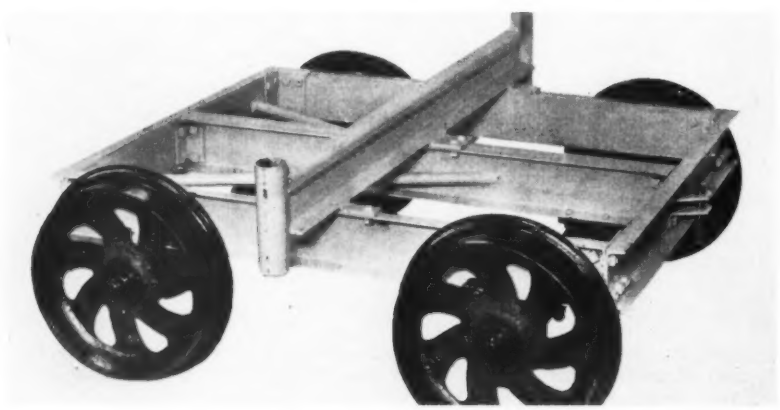
RAILWAY MAINTENANCE Corporation, Pittsburgh, has announced that a machine for replacing ties has been developed and will be in production by early summer. It is said that this machine embodies several new principles that have resulted in a reduction of the cost of tie renewals. The primary advantage claimed for the new machine lies in its flexible chain ram which cuts a bed for the new tie as it pushes out the old tie. The pilot model has been in service on over 90 miles of track and has installed about 23,000 ties. The overall production was reported to be a tie per minute, although the average time on several stretches of track was said to be 50 sec. per tie. It is further stated that it is possible to renew ties with this machine without raising track, that it does not foul an adjacent track while working and may therefore be used on inside tracks of multiple-track territories if additional laborers are provided to place new ties in position and remove old ties that are not loaded on push cars.

The machine will be hydraulically operated and controlled by one man with the assistance of two laborers. Its sequence of operation consists of spotting the ram opposite the tie to be replaced; clamping the machine to the track; raising the track and machine slightly to clear the tie plates (from which spikes have been previously removed) by means of two lifting cylinders; lowering the ram roller guide track over the old tie; pushing out old tie; fastening the new tie to ram by means of a strap engaged in prebored spike hole in new tie; returning the ram through the crib, thereby pulling new tie into place square with the rails; and releasing the ram, roller track, lifting cylinders, and rail clamps ready for move to next tie.

One laborer is used to drive the tie strap into the spike hole, hook the new tie to the ram, and remove the strap from the ram after the new tie is in place. When ties are not prebored at the treating plant, a drill, powered by the machine, may be provided for boring spike holes. A chute is provided for returning the strap from the side of machine where it was removed to the side where it will be applied.

The other laborer operates a boom equipped with a hoist and power tongs which are used to place new ties in position and to load ties removed from the track to a push car coupled to the rear of the machine. Controls for hoist and tongs will be of the push-button type on an extension which permits the laborer to remain clear of the tie at all times. The push car carries steel strapping bands in slots in its bed. When sufficient ties have been loaded, they are banded together in a bundle, and the bundle is rolled from the push car by means of hydraulic cylinders, powered and operated from the machine; these tilt the bed of the car in either direction.

This machine will be equipped with power jacks and transverse set-off wheels, lights for working at night, horn, hydraulic brakes, enclosed operator's cab, safety indicator lights to show position of rail clamps and roller track, a sanding device for traction, and optional boom and push car for attachment to the front of the machine for loading an additional classification of ties as removed. It will be powered by a three-cylinder diesel engine driving three interchangeable hydraulic pumps. Two hydraulic motors are interchangeable, with one used for propelling and the other to drive the ram through a cone drive reduction unit.



HEAVY-DUTY PUSH CAR

LOAD CAPACITY of 20,000 lb. is the feature of a new heavy-duty rail push car manufactured by the Woolery Machine Company, Minneapolis. This car is equipped with chilled-face heavy-duty wheels, 2½-in. divided axles, double-row ball bearings and a drawbar connection at both ends. It is of 6-in. channel bolted construction, with a wheel base of 40 in.; frame length and width of 61 and 52 in., respectively; and a bolster width of 75 in.

GAS IMPACT WRENCH

A GAS-ENGINE POWERED impact wrench has been introduced by the Mall Tool Company, Chicago. This heavy-duty unit, which operates independently of power lines and compressors, is completely self-contained so that it may be operated anywhere at anytime.

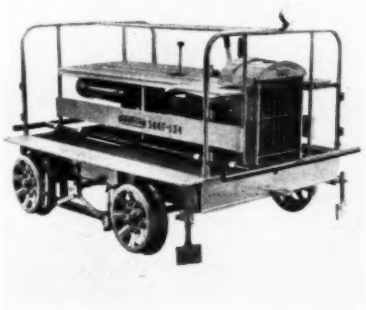
Model 4GW is powered with a 1-cylinder, 2-cycle, 5-hp. gasoline engine. It is equipped with fingertip controls, automatic clutch, one-hand rewind starter, dust-moisture-proof ignition, all-position carburetor and reversing mechanism. Constructed of die-cast aluminum-magnesium the unit weighs 43 lb. It operates at a free speed of 1800 rpm and will drive nuts or bolts up to the ⅞-in. sizes.

HY-RAIL CAR may now be obtained with a new general-service body or a . . .

BODY STYLES

A NEW ENCLOSURE and a new body for the A32 Series A Hy-Rail motor cars produced by Fairmont Railway Railway Motors, Inc., Fairmont, Minn., have been announced. The new body is an all-steel general-service type equipped with compartments with doors along either side. These compartments are equipped with shelves for small and medium-size tools as well as supplies. The center section is open, with a nonskid steel plate floor and a low, latch-type tail gate.

A waterproof canvas enclosure has been made available for the standard pickup body. It is covered with 12-oz. brown waterproof canvas. Flexible plastic windows have been provided in the rear and door curtains. The side and rear curtains may be rolled up, if desired, for easy accessability to bed.



NORTHWESTERN Model 566F-134 gang car.

. . . WATERPROOF canvas enclosure for the standard pickup body.

GANG CAR

INCREASED POWER and seating capacity are features of the new model 566F-134 gang car recently announced by Northwestern Motor Company, Eau Claire, Wis. The car is powered with a 134-cu in overhead-valve, 4-cylinder, water-cooled industrial engine. This engine is said to provide an increase of 10 hp over that available in previous models. The seating capacity of the car has been increased to permit two more passengers.

Standard equipment includes rail skids, extension lift bars, safety-tread steel running boards and tool-tray bottoms, full-length safety rails front and rear, oil filter, air cleaner, starter, generator, battery and differential axle.

HYDRAULIC JACK AND TAMPER

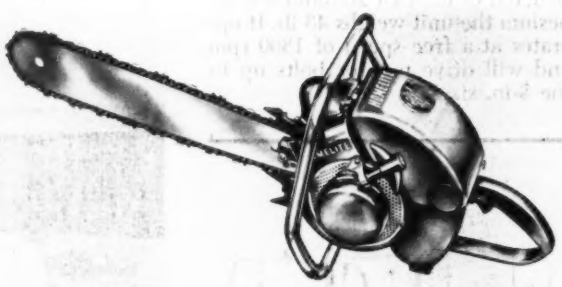
KERSHAW JACK-ALL, a combination hydraulic jack and tamping machine, has been completely redesigned to incorporate new features, according to an announcement of the Kershaw Manufacturing Company, Montgomery, Ala. This machine is designed to raise the track and "catch-off" the two adjacent ties, ahead of high production surfacing gangs equipped with multiple tampers, so that the surface will hold for the finish tamping.

In the new model the jacking head has been redesigned so that the jacking feet will operate beyond the ends of the crossties, making it necessary to spot the machine for the tamping operation only. The rail dogs for the jacking operations are completely automatic and catch the rail when the jack feet engage the ballast.

The tamping heads located on either side of the machine are individual units which are raised and lowered on a pantograph arrangement operated by a hydraulic cylinder. This arrangement permits the tamping heads to close and open around the tie, which action is said to tamp the ballast directly under the tie, thereby, it is said, providing a more positive tamping action.

The machine is equipped with a new eye-level telescopic sighting unit complete with a fixed target on the Jack-All itself and a movable spotboard mounted on rollers to operate on the track ahead of the unit.

The Jack-All is equipped with a 75-hp. water-cooled engine which drives four hydraulic pumps that furnish the fluid for all hydraulic controls. The machine is propelled with a hydraulic motor through a two-speed transmission.



ABOVE — Homelite Model 17 chain saw.

LEFT — SCHRAMM crawler-welder in action.

CRAWLER-WELDER

A SELF-PROPELLED crawler-welder has been announced by Schramm, Inc., West Chester, Pa. This unit, which includes a 300-amp. GE welder mounted on a crawler tractor, has been designed to operate in cramped quarters. It has a speed of from 1 to 11 mph and is regulated by a transmission with four forward speeds and one in reverse.

The unit is powered with a Ford V-8 engine with a displacement of 240 in. and an operating speed of 2000 rpm. The welder drive is a heavy-duty Spicer power take-off from the Ford transmission. This steps the speed up to 2400 rpm, and a V-belt drive steps the welder speed up to 3500 rpm. The machine has an overall length of 90 in., a width of 32⅞ in. and a weight of approximately 3200 lb. The gasoline tank has a capacity of 12 gal.

CHAIN SAW

A COMPLETELY NEW chain saw which is said to be lighter in weight, faster cutting and easier to handle has been announced by the Homelite Corporation, Port Chester, N.Y. Designated the Model 17, the new saw weighs 22 lb. and is rated 3.5 brake horsepower.

Other features of the Model 17 include an automatic clutch, all-angle diaphragm carburetion, positive chain lubrication, quick starting and weatherproof ignition system. Straight blades are available in sizes from 15 in. to 36 in. Plunge-cut bow-saw attachments, for one or two-man operation, are available in 14-in. and 18-in. sizes.

(*Please turn to page* 82)

MANAGEMENT TODAY DEMANDS ECONOMIES . . .

As Diesels by their low record cost of operation replace steam, so in weed control work

"HERBICIDOL"

by its conspicuous economy as compared to other types of weed killing chemical, each year finds an enlarged list of railroads showing a preference for it.

In cases where railroads split their business, invariably "HERBICIDOL" shows low average cost per mile.

Where a railroad is using more than one weed killing product including "HERBICIDOL," comparison of benefits and costs invariably show that our product contributes more kill on a dollar value basis than others.

Where plot tests are under study, for comparative purposes, the "HERBICIDOL" treated plot stands out like a headlight in the dark.

MAY WE SUBMIT FURTHER DATA TO PROVE OUR STATEMENTS?

READE EST 1883

READE MANUFACTURING COMPANY, INC.

JERSEY CITY 2, N. J.

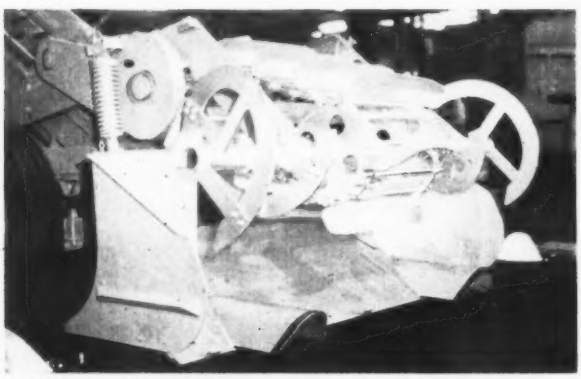
WORKS: JERSEY CITY ● CHICAGO ● KANSAS CITY ● MINNEAPOLIS ● BIRMINGHAM ● STOCKTON

HEAVY-DUTY CRANE AND EXCAVATOR

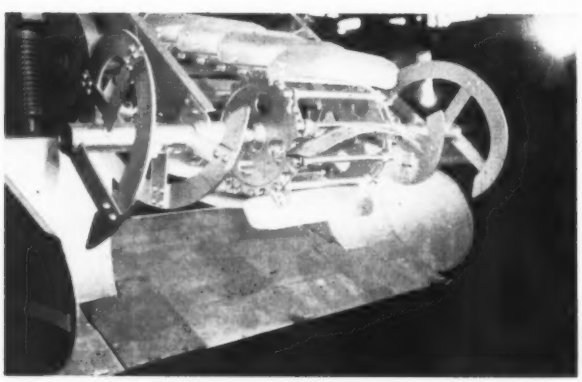
SPECIAL HEAVY-DUTY equipment for the Model 22-B ¾-yd. crane-excavator has been announced by the Bucyrus-Erie Company, South Milwaukee, Wis. The new heavy-duty Model 22-B, while basically the same machine as the standard model, has these additional features: A long frame crawler mounting which provides increased bearing area for improved traction in tough going, or stability and maneuverability for fast dragline, crane and clamshell work; and a heavy-duty boom with added weight and strength to provide increased work-load capacity.

When equipped for lifting-crane service, the heavy-duty 22-B carries boom lengths from 35 ft. to 70 ft. Boom suspension is of the pendant type. For increased ease, safety and efficiency of operation, the heavy-duty 22-B offers power controlled lowering on the main hoist line. In addition, hoisting and lowering of the boom is power controlled, fully independent of all other functions. Other safety features include a friction swing brake (in addition to the regular swing lock), and boom stops of the telescoping pipe type.

When equipped for dragline or clamshell work, the heavy-duty 22-B carries booms ranging from 35 to 50 ft. Shovel and dragshovel front ends are not offered with this machine, but are still available with the standard Bucyrus-Erie 22-B machine and the 22-B Transit Crane.



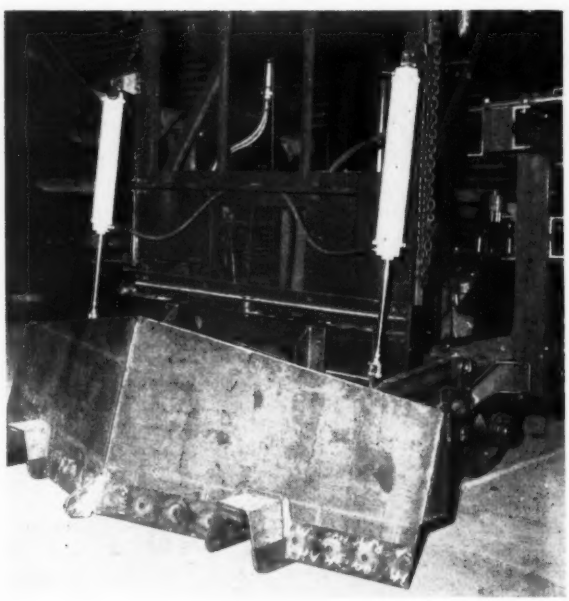
HI-LOADER with moldboard arranged for track cleaning . . .



. . . AND WITH moldboard attachment for stockpile loading.

CONVERTIBLE MOLDBOARD

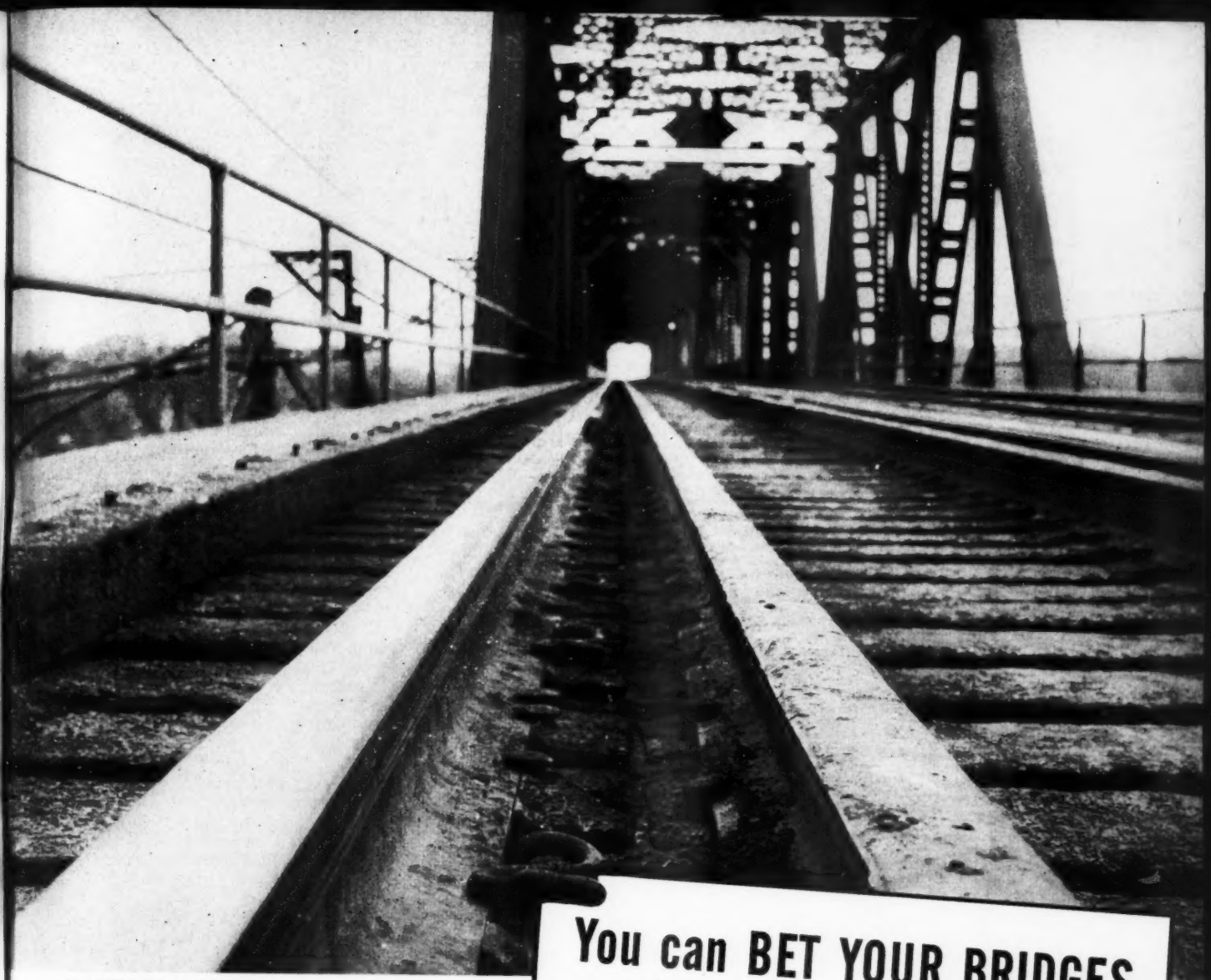
AN ARRANGEMENT whereby the moldboard on the Athey Hi-Loader track cleaner can be changed from a track-cleaning operation to a stock-pile loading operation has been announced by the Athey Products Corporation, Chicago. The tunnels on the moldboard, which make the machine capable of cleaning outside the rails and also the space between the rails have been made removable on the machine. After the tunnels are removed, two plates are bolted on the moldboard to give a smooth surface which, it is stated, allows the machine to better crowd into the stock piles of sand or gravel and do a more efficient loading job.



BALLAST PLOW

EXCESS BALLAST between the rails may now be distributed and leveled with a new center plow designed for attachment to the Class M23 Series E ballast maintenance cars manufactured by Fairmont Railway Motors, Inc., Fairmont, Minn. The plow is hinged to the frame of the machine and is raised or lowered by pneumatic cylinders. When in the lowered position the plow rides on shoes that slide on the rail. The position of the lower edge of the plow with respect to the top of the rail can be varied by installing or removing shims from between the shoe and its support.

(*Please turn to page* 84)



MACBETH SPIKE ACHORS at work for one of America's leading railroads on an important dense traffic bridge (above).

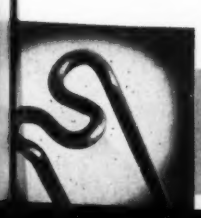
MACBETHS are easily driven into ties—AND THEY WON'T WORK LOOSE!

You can BET YOUR BRIDGES on this rail creepage control

The *Macbeth Spike Anchor* combines more advantages than any other device for controlling rail creepage on bridges and approaches.

- One piece construction
- Easily driven with maul or sledge
- Clamps tie plate and tie to rail—no hold downs
- Acts as an anchor . . . Prevents creep
- Reduces tie wear . . . Holds gage
- No maintenance . . . No adjustment

To get performance facts and comparative costs, write for Bullettin 3-S.



H. T. KENNEDY COMPANY, INC.

37 WALL STREET NEW YORK 5, NEW YORK

WEED KILLER TRADE MARKED

TELVAR W weed killer now identifies the CMU formulation which has had considerable industrial use over the past two seasons, according to an announcement by the Grasselli Chemicals Department of E. I. DuPont de Nemours & Co., Wilmington, Del.

The product is designed and packaged for custom applicators and industrial users for application where the objective is complete control of vegetation for an extended period of time. The letter "W" in the name identifies the product as a wettable powder.

Industrial trials of Telvar DW weed killer are planned for this year. Here again the "W" means that it is a wettable powder and the "D" stands for the active ingredient which is 3-(3,4 dichlorophenyl)-1,1-dimethylurea.

RUST PREVENTIVE

DEARBORN CHEMICAL Company, Chicago, has announced the development of a new rust preventive consistency known as NO-OX-ID "400." This black, dry-to-the-touch, wax-type film is said to contain self healing qualities. It may be applied by brush or it can be sprayed at 65 deg. F. or higher. It is reported that the product, designed for one-coat application, provides good penetration and superior hiding properties combined with excellent coverage. The manufacturer recommends its use for tracks and bridges as a heavy-duty protection against rust and corrosion.

EXTINGUISHER CAR

PRODUCTION INCREASE of weed-burner operation is said to result from the use of a new 1,000-gal. extinguisher car which provides high pressure water jets for use on small widely scattered fires resulting from the operation of weed burners. This car is a products of Woolery Machine Company, Minneapolis, and is equipped with a centrifugal type pump of all-bronze construction capable of discharging water at 1200 gph and 80-lb. pressure. An adjustable pressure regulating valve is also supplied with a range of 0 to 100 lb. The nozzles are of the trigger type whose quick action is said to conserve water. Hose equipment consists of one 50-ft. and two 10-ft. sections. The 50-ft. section is equipped with a large nozzle.

The 1,000-gal. tank is mounted on a 6-in. channel chassis with 2½-in. ball bearing axles and 20-in. Griffin chilled-face car wheels. The car is equipped with 4-wheel, lever-operated brakes. Power is supplied by a 4-hp engine.

(*Please turn to page* 87)

ELEVATOR ATTACHMENT FOR MOTOR GRADERS

SIDE-CASTING or loading trucks is said to be expedited with a newly designed elevator attachment with a capacity ranging up to 1200 cu. yd. per hour depending on soil conditions. This attachment is now available through Allis-Chalmers dealers and is designed for application to the Allis-Chalmers Models 78-b.hp. AD-30 and 104-b.hp. AD-40 motor graders. It is also applicable to the two preceding models AD-3 and AD-4. This new unit was developed by the Hancock Manufacturing Company, Hitchcock, Tex.

The main frame, including the heavy-duty box-type plow beam, is a single unit which is mounted quickly and easily at three points on the grader. The plow beam is adjustable for different positions of the standard 30-in. disc which also has adjustments for wearing positions.

The live power take-off is directly connected to the engine drive shaft through V-belt sheaves to the heavy-duty clutch. This drives the 42-in. wide conveyor belt. The length of the conveyor is 19 ft., with a 3-ft. extension available as an extra. The conveyor can be shortened to 16 ft. by removing a 3-ft. length. The conveyor is hinged and folds at the center to a vertical position for transit.

Controls for operating the plow beam, and raising and lowering the conveyor at the drive roller end, tail roller end, and the hinged center are conveniently located for the operator's use.

An exclusive two-way spiral cleaner carries dirt out both sides. The cleaner is driven by the conveyor belt to eliminate transmission problems. A V-type cleaner keeps the dirt from between the belts. The carrier bearings are sealed double ball-bearing rollers. The head and tail pulleys are of a self-cleaning open type, crowned at the center and mounted on heavy-duty, self-aligning roller bearings.

THE NEW CATERPILLAR D8 TRACTOR

More Power... More Profit... More Production...

The new Caterpillar D8 Tractor...designed and built by Caterpillar, sold and serviced by the world-wide Caterpillar Dealer organization.

With 150 HP available at the drawbar, the new D8 offers new standards of track-type tractor power, production and value.

Meet the new boss of the crawlers!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

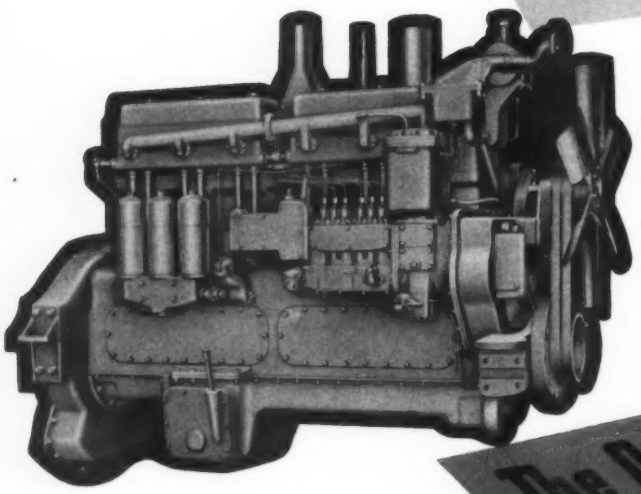
THE NEW D8 Boss of the Crawlers

- The new D8 has more drawbar horsepower...horsepower that works for you.
- The new D8 is compact...it retains the maneuverability needed in tractor applications.
- The new D8 is versatile...matched to Caterpillar-designed Bulldozers, Scrapers, Rippers and Pipe Layers.
- The new D8 is also a pusher...available attachments make this machine a powerful push tractor.

CATERPILLAR

REGISTERED TRADE MARK ®

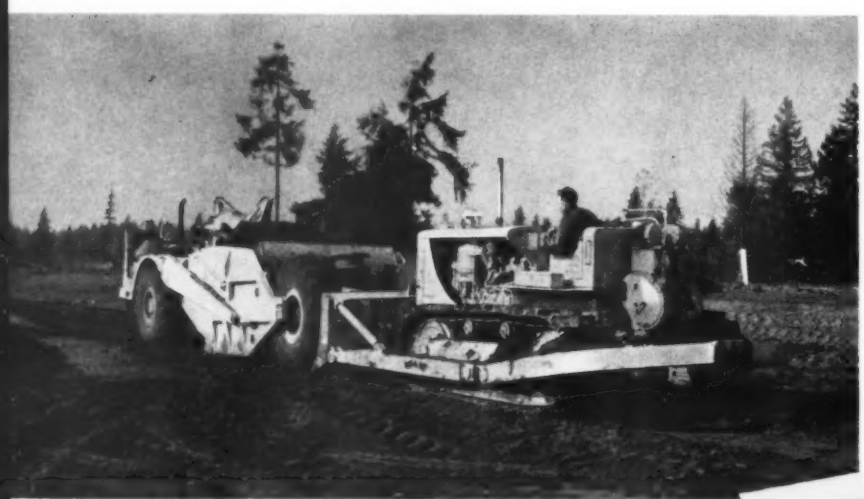
The Powerful D8 Engine



The new high performance of the Caterpillar D8 Tractor stems from the 185 HP, 1200 RPM diesel engine. Important new features, built into the time-tested and job-proved Caterpillar design, contribute to longer engine life and decreased operating costs as well as higher power. See your Caterpillar Dealer for all the reasons why the D8 is a better value.

The Oil Clutch

Only Caterpillar offers you the long life and low maintenance costs of the oil clutch. This advanced design feature of the D8 has already set new records of performance and owner satisfaction on dozens of tough jobs in all parts of the world. It's another example of Caterpillar's leadership in developing equipment for you.



- 150 Drawbar Horsepower
- New Long Life Engine Features
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- New, Large Air Cleaner
- Weight 38,155 lbs. (shipping weight)
- Compact Fuel Injection Equipment
- Double Universal Joint to Protect Clutch and Transmission Bearings

THE NEW D8 Boss of the Crawlers

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CATERPILLAR D8 has several improved engineering and design features

IMPROVED TRACTORS

INCREASED Horsepower, weight and engineering advancements are features in the new models D2 and D8 Caterpillar tractors manufactured by the Caterpillar Tractor Company, Peoria.

Drawbar horsepower of Model D2 has been increased from 32 to 35 with an increase of approximately 525 lb. in the weight of the machine. The overall length has been increased 6⅝-in. and two more track sections have been added. As a result of the increased length it is now possible to remove the flywheel clutch without disturbing the engine. The seat has also been moved forward to provide better access to the rear of the steering clutch case. Fuel tank capacity has been increased from 20 to 26 gal. and heavy-duty fenders and an under-the-seat tool box have been added as standard equipment.

The new Model D8 is equipped with a Caterpillar diesel engine with a rated output of 185 hp. operating at a governed speed of 1200 rpm. This new engine features a new cylinder head incorporating improved valve springs similar to those used in Caterpillar's V12 engines, valve rotators, valve-seat inserts of specially hardened metal for both inlet and exhaust valves, a new camshaft, stainless steel heat plug, oil pump mounted in the oil pan and driven from the front of the camshaft, oil pressure throttle-control system, enlarged inlet manifold and a larger air cleaner.

The new D8 will develop a drawbar pull in first gear of 29,200 lb. with standard transmission and 39,800 lb. with the optional heavy-duty transmission. Forward speeds with the standard transmission range from 1.9 mph in first to 5.8 mph in fifth, while with the optional heavy-duty transmission these speeds are reduced to 1.4 and 5.0 mph, respectively. Reverse speeds range from 1.9 mph for first to 5.8 mph with third for standard and 5.2 mph with third for the optional transmission. This model has an overall length of 16 ft. ⅜-in., height 7 ft. 2 in., width 8 ft. 7¾-in., and a shipping weight of 38,155 lb.

FRONT END LOADER

POWER STEERING, torque converters and reversing planetary transmissions are standard equipment on a new line of Le Roi Transo front-end loaders recently announced by the Le Roi Company, Milwaukee, a subsidiary of the Westinghouse Air Brake Company. These loaders will shortly be available in sizes of ½ to 1½ yd.

This new line also features a patented bucket-rocking action and scooping motion of the lift arms which, it is reported, will assure full bucket loading without tire spinning and other undue strain on the loader. The bucket rocking action is actuated by the hydraulic lift and bucket cylinders. These have been placed well behind the dirt agitating area to provide extra reach. It is said that this rocking action is greatly assisted by the positive traction of the loader.

The planetary type reversing transmission and torque converter have been designed to permit rapid power transmission at a very low torque. The installation of a spring-loaded clutch on the outside of the transmission is said to cushion shock loading. A low 36 to 48-in. normal carrying position for the bucket has been provided to increase operator vision.

The compact grouping of the torque convertor, engine, transmission and clutch at the rear of the unit has been designed to permit easy access and maintenance. All sizes are powered by Le Roi heavy-duty engines. However, they will also be available optionally with reputable diesel engines.

Model TLF-150 has been equipped with a four-wheel-drive at a low center of gravity and is reported as capable of moving to discharge points at a speed of 18 miles per hour.

CRAWLER-MOUNTED GRADALL

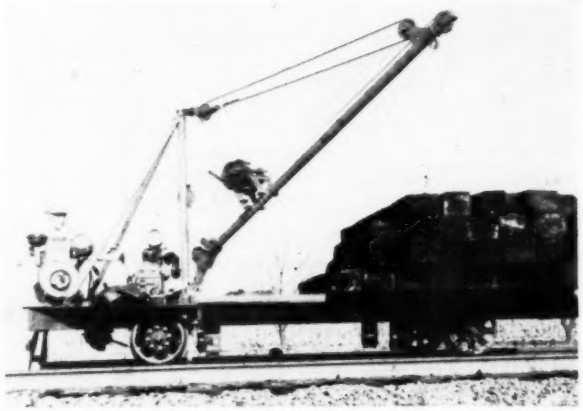
MANEUVERABILITY in tight quarters or on swampy terrain is said to result from new features which have been incorporated in the recently introduced crawler-mounted Gradall. This machine, a product of the Gradall division of Warner & Swassey Co. Cleveland, is also reported as being especially adapted for use with work trains.

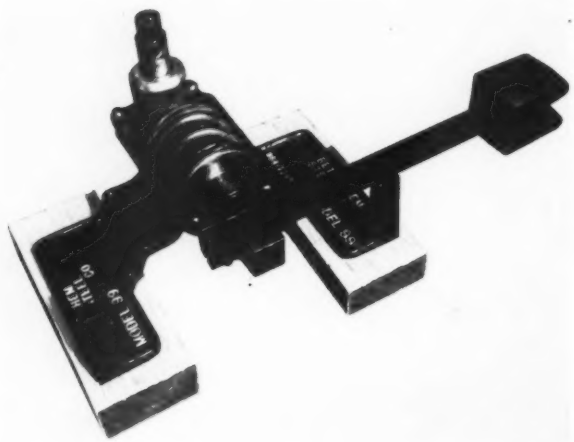
Two 1,300-rpm hydraulic motors geared down to 40 rpm furnish 44 hp to power the boom and the crawler through an all-hydraulic drive which eliminates most of the cumbersome deck machinery and excessive dead weight. A diversion valve pedal and two brake levers have been added to the five regular Gradall controls so that the operator has complete control of the crawler.

The unit has two speeds, ½ and 1 mph and is reversible, simply by reversing the flow of oil through the hydraulic motors. This feature eliminates the need for clutches. Either track may be locked or one or both coasted to permit greater maneuverability.

With standard 18-in. shoes the machine is 8 ft. 2 in. wide and 10 ft. 1 in. long with a height to the top of the cab of 9 ft. 8¼ in. and a minimum under clearance of 15½ in. It weighs 27,980 lb. which gives it a bearing pressure on the shoes of 8.4 psi. Other optional shoe sizes are available.

RIGHT — KERSHAW track crane for heavy lifts.





LEFT — BETHLEHEM Model 99 automatic switch stand.

SWITCH STAND

THE BETHLEHEM Steel Company, Bethlehem, Pa., has announced a new automatic switch stand known as the Model 99. Designed to stand up under the heavy abuse of run-through operations, the new stand is recommended for use with rails 60 lb. and over, in all yard, siding and ladder track installations where normal operation requires spring action. The stand may be operated manually as well as automatically. The manufacturer claims that the number of working parts has been kept to a minimum, and that vital parts such as the swivel link, link and pins, and screw-eye are heat-treated for extra strength and durability.

In run-through movements, the first set of wheels moves the points toward the new position, and the movement is completed by a spring mechanism working on the sliding-block principle. The points remain in this position until returned by the operating lever, or another run-through operation is completed. The target changes with the points to show the new routing, but the lever remains unchanged until thrown by hand.

TRACK CRANE

EFFECTIVE HANDLING of cross ties by a track crane developed by the Kershaw Manufacturing Company, Montgomery, Ala., is said to be the feature of this new machine. The unit is also said to be adaptable for the handling of bridge timbers, concrete pipe, frogs, switch points, signals, signal boxes, small powered machines and supplies.

The Kershaw track crane is equipped with a single drum hoist driven by an 8-hp. gasoline engine which delivers a 500-lb. pull to a single line. The boom, with a 270-deg. swing and 10-ft. working radius, may be raised or lowered by means of a hand-operated winch. The unit, weighing 3000 lb., is self propelled by a hydraulic motor. The machine is equipped with side set-off wheels for ease in removal from the track.

(Please turn to page 90)

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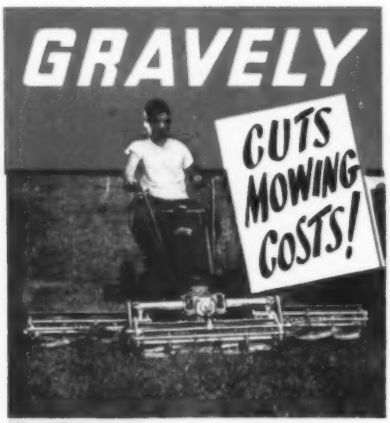

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3 MOWING TOOLS

YOU CUT MOWING COSTS because ONE Gravely Tractor powers all the tools shown — and more — 21 in all!

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AERIAL LADDER

A MECHANICAL aerial ladder which it is stated may be mounted on almost any type body or chassis is now available. This device is reported to be especially adaptable in operations which do not require heavier and more expensive equipment.

The manufacturer, the J. H. Holan Corporation, Cleveland, Ohio, advises that the ladder rungs are of straight grained hickory reinforced with steel rods, which are attached with rigid clamp-type brackets and are easily removable for replacement.

POSITION OPEN

Draftsmen, Way and Structures and Electrical Departments, for location in Michigan City, Indiana. Railroad experience desirable but not essential. Permanent. Chicago South Shore and South Bend Railroad, Michigan City, Indiana.

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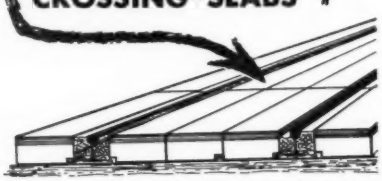
CROSSING SLABS



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Write for Bulletin CX-1

PERMACRETE PRODUCTS CORPORATION
COLUMBUS 7, OHIO

Cribbing **Houses** **Posts**

POWER SHOVELS

TWO NEW ¾-cu. yd. capacity power shovels, crawler and truck mounted, have been announced by the Construction Machinery Division of Clark Equipment Company, Benton Harbor, Mich., as having been added to its "Michigan" line of excavators and cranes. These will be manufactured in two truck-mounted models and one crawler model. The truck crane models, designated T-24, will be available with either the 6-by-4 drive or the 6-by-6 all-wheel drive. The crawler-excavator model has been designated C-24.

Among the specific features of the new units listed by the manufacturer are: A completely new cab of modern design which affords full visibility for the operator, even for high-boom work; a turntable base of one-piece steel casting which has the hinge-pin bracket and roller brackets cast integrally and six hook rollers on anti-friction bearings for providing a three-point mounting on the circle gear; one-piece side frames; a primary drive with the primary and secondary reduction in power coming from the engine to the main drive through two sets of spiral bevel gears completely enclosed and running in oil; an independently operated worm-gear boom hoist; a completely new and redesigned fairlead of the revolving type with anti-friction bearings on sheaves and trunnion; hoist and crowd drums mounted on the same shaft and actuated by air-ram multiple-segment clutches; controls conveniently grouped for ease in operation; and removable inside counterweights.

The truck-mounted models are available with power steering. The chassis is powered by a heavy-duty 529-cu. in. engine with a five-speed forward, one-speed reverse transmission and two-speed transfer case. Axles are heavy-duty double-reduction tandem rear with torque-arm suspension and rocker-beam mounting. Telescoping rear and center outriggers are standard equipment.

The body, circle gear and roller paths of the crawler type are cast integrally. The crawler drive gears are completely enclosed and run in oil. This unit is equipped with automatic spring-loaded, self-locking brakes which are disengaged by air rams while traveling.

NEW HEAVY-DUTY CRANE CARRIER

THE ADDITION of a new specially designed crane carrier to its line of trucks available for mounting the Model T-35 crane has been announced by the Schield Bantam Company, Waverly, Iowa. Built around a 12-in. I-beam frame, the new carrier has a 148-in. wheelbase, 4-wheel drive and 10 wheels with 8:25 by 20 tires. The power plant features a Hercules JXC 6-cylinder, 282-cu. in. industrial type gasoline engine which develops 113 hp. at 3200 rpm., a 26-gal. gasoline tank, and a 5-speed transmission with dual range providing 10 speeds forward and 2 in reverse.

Axle ratings are 6,000 lb. for the front and 26,000 lb. for the rear, and both axles have a differential lock-out device which, the manufacturer claims, assures positive

(*Continued on page* 92)

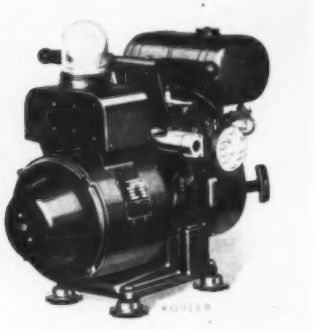
drive under any ground conditions. Overall, the machine is 236 in. in length, 96 in. in width and 9 ft. 6⅝ in. from the ground to the top of the basic unit cab. Total weight of the crane carrier, with front and rear outriggers and fenders, but less the basic Bantam unit including counterweight and front-end attachment, is 11,660 lb. The company claims excellent maneuverability and visibility for the truck with a 16½-ft. turning radius and a one-man driver's cab containing six windows.

An added feature of the carrier is a two-position mounting for the upper machinery. The forward position, 24 in. ahead of bogie center, gives the machine added stability with clamshell, dragline, magnet, pile driver and concrete handling attachments. The rear mounting, 6 in. ahead of bogie center, is designed for digging operations with the backhoe and shovel attachments. Front and rear pin-connected pull-out outriggers and fenders are also available for the Bantam carrier at extra cost.

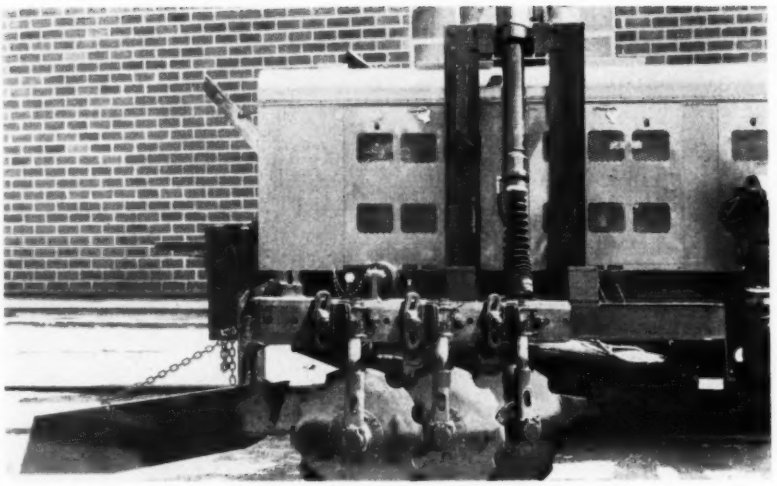
PORTABLE ELECTRIC PLANT

KOHLER COMPANY, Kohler, Wis., has announced an improvement in its Model 1.5 M25 portable power plant which is said to make it especially adaptable for the furnishing of power to operate power saws, drills, tampers, pipe cutters and threaders and floodlights.

The introduction of the new Kohler K90 air-cooled engine,

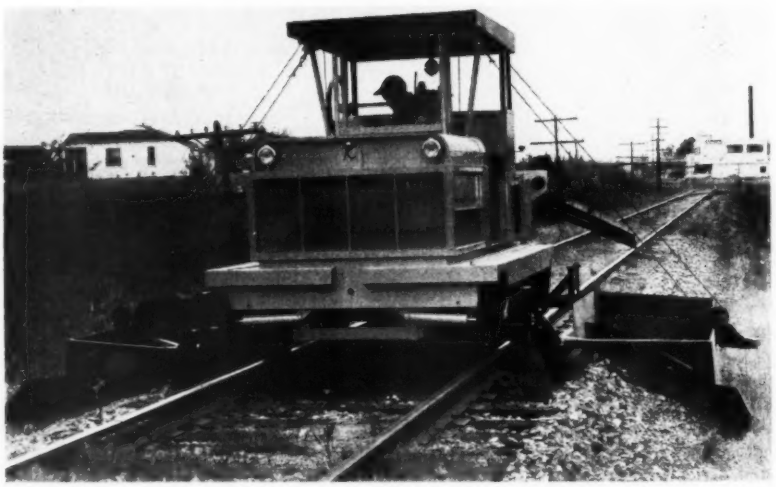


which delivers 3.6 hp. at 3600 rpm, is said to provide ample engine power for the generator rating with a reasonable overload for intermittent duty. There are four plug-in receptacles located just beneath the pilot light. The attached fuel tank has a capacity which will permit 3 hr. of operation at full load. The unit weighs 130 lb. and is equipped with convenient carrying handles.



IMPROVED TOOL MOUNTING

RAISING AND LOWERING of the various work tools mounted on the W77 Series A ballast maintenance car has been improved by the installation of large hydraulic cylinders, according to an announcement of Fairmont Railway Motors, Inc., Fairmont, Minn. It is said that these new hydraulic controls simplify the installation and make accurate control of the position of the tools more easily and quickly performed.



BALLAST REGULATOR

THE KERSHAW ballast regulator, scarifier and plow, a product of Kershaw Manufacturing Company, Montgomery, Ala., has been completely redesigned to improve the type and amount of work which the machine will perform.

Some of the applications of this machine include the regulation and distribution of ballast and placing of ballast for tamping machines; regulation and distribution of shoulder ballast and dressing track; plowing ballast from the tie ends ahead of a retimbering gang and replacing and dressing ballast behind the gang; scarifying and deweeding to provide adequate ballast drainage; reclaiming ballast which has worked away from the ends of the ties.

The machine is equipped with hydraulic controls for raising, lowering and horizontal adjustment of the wings. The hydraulic control levers are mounted on the rear fire wall for ready accessibility by the operator. A new type vertical screw has also been added for the adjustment of the wings vertically to satisfy the ballast section and the rail height. A V-type reversible plow is

situated on the rear of the unit.

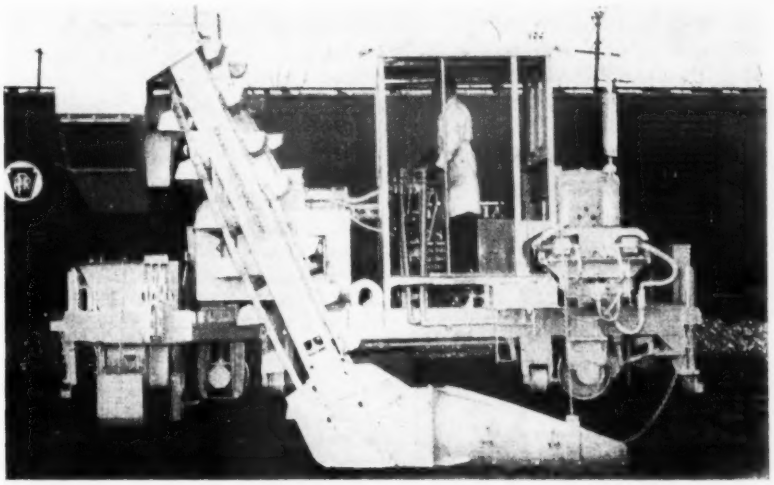
The machine is powered with an International Harvester 100-hp. gasoline engine complete with four speed truck transmission with both forward and reverse gears. This provides working speeds of from 0 to 3 mph. and a traveling speed of 22 mph. The unit is equipped with a top, wider operator's seat and running lights. The wheels have been redesigned to prevent warpage if the machine should become derailed, and a redesigned brake assembly has been provided which has more bearing supports to insure a more positive braking action of the self-equalizing brake shoes. Axle construction has been changed to incorporate 2½-in. axles complete with six 2½-in. double Timken bearings. A counterbalance type turntable has been mounted on the machine and the turntable runners form part of the running board.

The new machine weighs 9000 lb., which is said to increase the tractive effort thus enhancing its ability to handle a large load.

IMPROVED BALLAST DISTRIBUTOR

BETTER PRODUCTION, greater versatility of operation and decreased maintenance costs have resulted from improvements made in the McWilliams ballast distributor as a result of two years' experience in its operation, according to the Railway Maintenance Corporation, Pittsburgh.

The bucket conveyor booms have been lengthened to facilitate the transfer of ballast from one side of the track to the other and to get improved bucket efficiency. The hopper openings have been enlarged to accommodate the increased volume of ballast that can now be handled. Interchangeable pumps provide increased operating speed. Hydraulic brakes have been added. Power set-off jacks and transverse wheels have been provided for removing the machine from the track. Long wearing cast buckets of improved design and

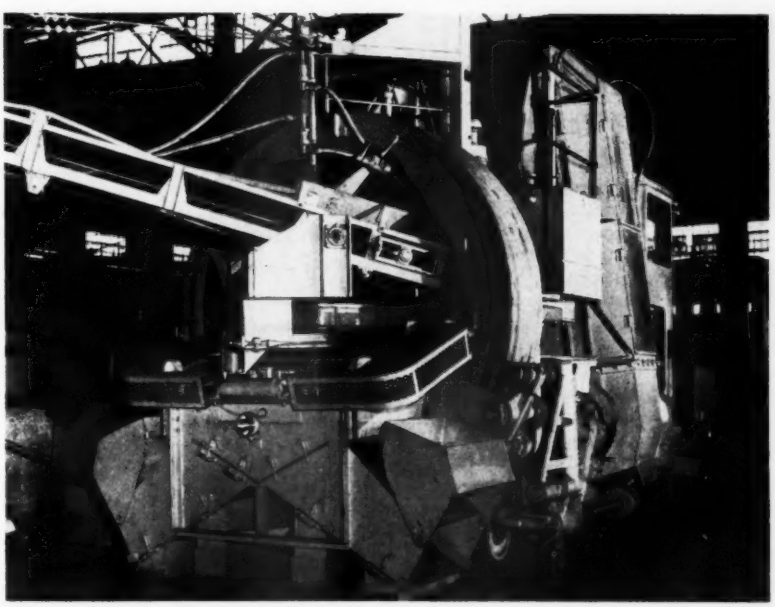


additional wear plates have been provided. Improved visibility and piping in the cab, plus the addition of platforms and hand railings, are aids for the operator's safety and efficiency. A controlled-flow sander eliminates wheel slippage and provides for uniform speed.

A hydraulically operated plow for removing ballast from the tops of ties and a ballast brush for final dressing of the tie are in development and will be available as optional equipment this summer.

BALLAST CLEANER

"TWELVE-WAY" distribution of ballast has been made possible by a new system of hopper chutes and baffle plates in the Power Ballast Cleaner, according to an announcement by the manufacturer, the Pullman-Standard Car Manufacturing Company, Chicago. With this system, it is stated that the cleaned ballast can be accurately spread between the rails, to either or both shoulders, or to various combinations of these locations either separately or simultaneously.



PULLMAN-STANDARD Power Ballast Cleaner equipped with new system of hopper chutes which enables the machine to better distribute cleaned ballast.

WHAT'S THE ANSWER? . . .

. . . a forum on track, bridge, building and water service problems

Housing Maintenance-of-Way Employees

To what extent is it practical and desirable to house maintenance-of-way employees in highway house-trailers or refitted bus-type vehicles? Is this equipment best adapted for housing any particular categories of employees? Explain.

Expense Not Justified

By Edward Wise, Jr.

Engineer Maintenance of Way, Louisville & Nashville, Louisville

To date we have given no serious consideration to housing maintenance-of-way employees in highway trailers or refitted bus-type vehicles. I can see many objectionable features, such as providing the equipment, parking space for them where electricity, water and sanitary facilities are available, furnishing of butane gas, etc., for cooking and heating purposes, and the maintenance of all this equipment. Furthermore, in cases on our railroad it would be necessary that employees have other means of conveyance to the job site.

The ways of maintenance-of-way employees are comparable with those in any other industry and I can see no reason for the railroad to go to any expense to provide housing for them.

Entirely Practical

By E. L. Anderson

Chief Engineer, St. Louis-San Francisco, Springfield, Mo.

It is entirely practical and in many cases desirable to house maintenance-of-way employees in highway house-trailers in lieu of housing them in regular bunk or camp cars. From a practical standpoint the adaptability of trailers to various types of gangs can be divided into three general groups:

Group 1—Highly mobile gangs consisting of one or two men who have available transportation units to handle trailers from one point to another, and working under conditions where the maximum move will not exceed approximately 150 miles.

Group 2—Mobile gangs consisting of not more than five men who move quite often from job to job and have available units of equipment that can transport the trailers from point to point, with moves not exceeding approximately 50 miles.

Group 3—Gangs larger than those outlined in Group 2, which move short distances at more or less regular intervals, separated by several days, and which require special power units for movement of the trailers.

Group 1 covers such employees as on-line-of-road welders, special equipment operators, etc., and consist of one or two men in a gang which may be housed in a small trailer that can be transported from point to point readily behind a light truck or ordinary passenger car, such truck or passenger car having been furnished them for their daily use in moving between point of work and camp site. These units can be provided and maintained for less than it is required to expend on ordinary camp cars. The advantages include, no waiting upon service by local freight to transport camp cars from point to point, more productive hours of work, better living accommodations, and elimination of motor-car transport between camp cars and point of work.

Group 2 consists of such employees as signal, bridge or small extra gangs that work with special types of work equipment. Such gangs are ordinarily furnished with a medium-size truck for transportation from point of work to camp site. Where these gangs are doing out-of-face work and the moves are short, the men can be housed in trailers rather than in camp cars and the trailers transported from one location to another with the gang truck handling the trailer or trailers. Moves can be accomplished while the gang is at work, making the necessary number of

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Answers to the following questions are solicited from readers. They should be addressed to the Whats' the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the June Issue

1. To what extent is it practicable and economical to use on-track tampers for spot-tamping work? What procedure and organization will give the best results? Explain.

2. Modern types of mechanical equipment for handling merchandise have imposed severe conditions of loading and wear on freighthouse floors. What changes can be made in floors of existing structures to minimize the effects of this equipment? Explain.

3. Under the agreements now in effect with the train-service brotherhoods, what measures, if any, can M/W officers adopt to assure the assignment of efficient crews for work trains?

4. What economic factors affect the choice of timber, steel or concrete piles for the construction of railway trestles? Explain.

5. What are the advantages, if any, in stockpiling ballast on line and subsequently rehandling it to the final location in track? Disadvantages? Explain.

6. What practicable measures can be taken at diesel fueling stations to control the spillage of diesel fuel? Explain.

trips as required to handle the one or more trailers. Under such conditions, trailers must be restricted in size to comply with state laws and to meet over-all length requirements for the combined motive and trailer units. Considering that the motive unit is required by the gang for other services, the trailers involve less over-all investment and maintenance expenditures than do camp cars. Better all-around living conditions are afforded with greater gang efficiency.

Group 3 is less workable than the other two groups. Housing facilities can be made out of converted buses which provide their own power. However, considering the cost of conversion and general condition of such equipment, it is doubtful if this would be advisable. It is recommended, in general, that equipment designed for the specific purpose be acquired. The practical application of trailers to this group contemplates moves of short distances made at intervals of several days so that the camp may be moved with a special motive unit, making whatever trips are necessary, while the gang is at work. Between moves this motive unit can be used for other practical purposes.

Gangs provided with trailers effect a net reduction in capital investment over those housed in camp cars. The cost of maintenance and handling is also reduced and moves can be made during hours suitable for the movement of the gangs. In addition gangs may frequently be located at more desirable living locations than would be possible if they were housed in camp cars. In many instances also the number of miles of travel between living quarters and point of work is reduced.

The use of house-trailers is still in an embryonic stage as applied to the housing of gangs other than those outlined in Group 1. For this group it has proved very satisfactory to both the management and to the employees that are involved, insofar as our operations are concerned.

One of the major items that must be considered when housing employees in trailers is over crowding. Another important consideration is the availability of all conveniences that have formerly been furnished in camp cars. In many instances conveniences in trailers can be provided that are now not possible in camp cars.

Heat Crowning of Joint Bars

Under conditions where worn joint bars have resulted in rail-end droop, to what extent is it practicable to restore the rail surface, at the joint, by heat-crowning the angle bars in track? How can this best be accomplished? Does this practice affect the strength of the joint bars? Explain.

Improves Riding Conditions

By A. B. Chaney

Assistant Chief Engineer System (Maintenance), Missouri Pacific, St. Louis

Flame-straightening or heat-crowning of joint bars in track is feasible, and under certain conditions results in improved riding conditions and a saving in the metal required for building up rail-end batter by as much as 35 per cent.

Straightening is accomplished by bringing both bars simultaneously to a "soaking heat" in the center area below the horizontal center line of the middle bolt holes. Two welding torches with a tip capacity of 80 cu. ft. per hour are used. The desirable heat is normally obtained in from 1½ to 3 min. and the raise or crown is proportional to the amount of heat applied. The joint spikes are pulled before applying heat.

Tests indicate a loss of from 10 to 15 per cent in tensile strength of the flame-straightened bars. Flame-straightened joints on heavy-traffic lines have a tendency to resume their former drooping position, while more lasting results are obtained where traffic is relatively light.

Little, if any, benefit is obtained by this method where the fishing surface of the bar is worn as may be expected on track with directional traffic. In many instances flame straightening is a limited but economical means for improving track and extending the service life of rail but it is not a "cure all" for badly worn joint bars.

Adds Life to Bars

By R. H. Egbert

Engineer, Maintenance, Toledo, Peoria & Western, Peoria, Ill.

We have straightened angle bars to correct rail-end droop by the oxyacetylene flame method with satisfactory results. Flame straightening will correct drooped rail ends and actually prolong the life of the bars. We straighten the bars by applying heat to the lower part of the angle bar below the line of the bolt holes. The heat is applied on each side of the center of the bar and extended upward in a triangular shape to the line of the bolt holes. We heat both bars simultaneously to a cherry-red heat without loosening the bolts, except for the two middle bolts when the rail ends have considerable droop. The heat is applied quickly with large capacity blow pipes to avoid distribution to other parts of the bar. The bars are allowed to cool naturally in the air.

We have found that by flame straightening the angle bars drooped rails ends are appreciably corrected. However in most cases we have also had to build up the rail ends. In cases where the droop in the rail ends is slight, flame straightening will correct the condition. In our opinion flame straightening does not affect the strength of the bar but the operator must be highly trained.

We would not flame straighten angle bars which have considerable wear in the bolt holes or where the contacts with the upper and lower fishing surfaces of the rail are so worn that flame straightening would not be practicable. On a four-hole flange joint, slotted for spikes, we experienced difficulty in flame straightening because the bars sometimes broke at the slot.

Better to Change Bars

By George S. Crites

Division Engineer (retired), Baltimore & Ohio, Baltimore

Drooped joints have all the bad characteristics of other sloppy low joints with the added feature of the downward bend of the ends of the rails in a permanent set, with slight indentations in the sur-

face of the head of the receiving rail just ahead of the end and a downward bend of the joint bars at their centers.

A quick correction for such a condition is proper application of new or reformed bars of the right section to the joints, together with proper support. However, should new or reformed bars be unavailable, the following proceedure has been found to be very effective.

A rail welder and his assistant are given three competent trackmen and the joint to be worked is jacked up slightly higher than the rest of the rail and the bars removed for inspection of the rail ends for incipient cracks. The bars and the rail ends are then cleaned and descaled, the bars are reapplied with good bolts and spring washers or other locking devices and the joint ties are well tamped. Little or no tamping is done on the ties adjacent to the joint ties.

The joint bars are then heat crowned. On single track, the crowning is done at the exact center of the bars, but on tracks carrying one way traffic the crowning is slightly off center toward the leaving end of the bars. This is to give the leaving end slightly more crown than the receiving end to avoid the impact of the wheels on the receiving ends of the rails. Quenching the heated bars with raw linseed oil toughens them.

Safety With Concrete Forms

What safety precautions should be taken by workmen when removing forms from concrete? Explain.

Good Beforehand Planning

By J. Galbraith

Supervisor of Structures,
New York Central, New York

In order to work safely these items should be considered in removing forms; First, the design of form used, whether of wood or metal; second, the type of structure, whether building, bridge or retaining wall; third, the location, whether near or over railroad tracks; and fourth, whether tie wire or bolted inserts are used to secure forms.

If the structure is large enough, the forms should be built in large sections with handling grips so that a crane can be used to strip the forms and thereby remove some of the hazard which is present when forms are removed by hand or by use of block and tackle.

Forms which are to be removed from structures over tracks are a potential source of accidents due to the inaccessable location and the fact that the time for removal is limited to the period between trains. Where a work train is available, this hazard may be reduced by the use of a scaffold erected on a low-side gondola from which the men can work in a safe manner. If a work train is not available, the men must work from ladders or other type of scaffold and, as this is dangerous at best, the supervision should keep a close watch on the operation.

When tie wires are used to secure the forms, it is a "must" to use goggles and gloves while cutting the wire from the concrete for the prevention of cuts and eye injuries. Patented form anchors greatly reduce this hazard and are more economical in the long run.

Safety not only in removing concrete forms, but in all classes of work, consists of good beforehand planning, complete understanding and cooperation between all concerned as to procedure, good common sense, and a good safety mind that thinks of the other fellow and not just ourself.

Good Housekeeping Helps

By Robert D. Gidel

Senior Engineer,
National Safety Council, Chicago

There are several matters to be concerned with in the safety precautions to be taken by workmen in removing forms from concrete. First, forms should not be removed prematurely. The worker should be sure that the concrete is properly set, and not frozen.

Particular attention should be paid to the removal of nails from the forms, to reduce the possibility of cuts, punctures, and attendant infections. The forms should then be removed to a preselected location and properly piled to be ready for reuse. This constitutes a good-housekeeping measure and prevents excessive damage of forms when not properly cared for.

Men should not work above a place where the forms are being removed from a structure. If, however, this is necessary, protection of the strippers should be provided so that they will not be injured by an object falling from above. Likewise workmen, other than the strippers, should not be permitted below the operation, unless a decking has been provided to protect such workmen from falling material.

Only men actually engaged in the stripping work should be allowed in the area. Before stripping forms, centering should be well supported by shoring. Ledgers should be fastened to shores to prevent the centering from falling. In cutting tie-wires under tension, care should be taken to prevent a back-lash which might hit the body, particularly the face, eyes or throat.

Safe Workmen Important

By H. M. Harlow

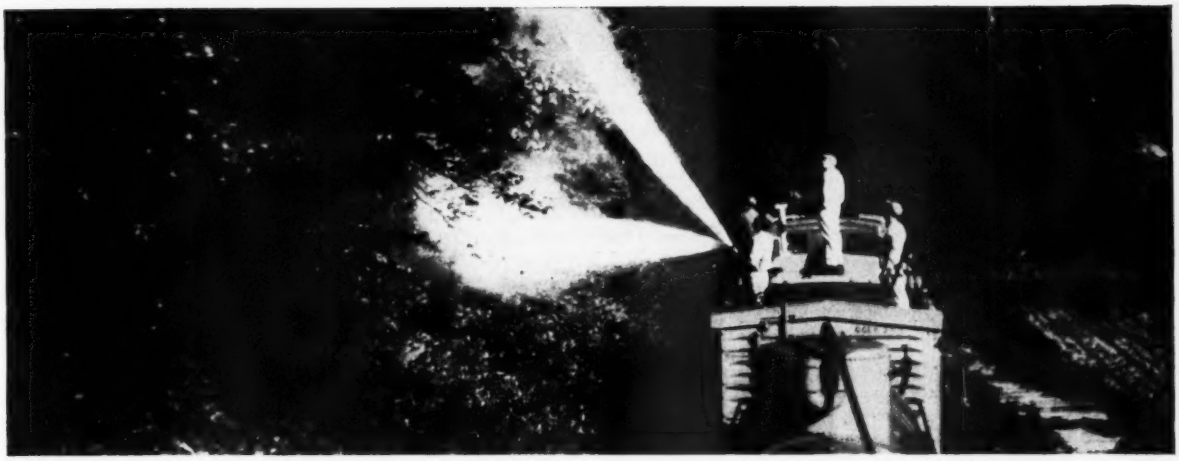
Assistant General Supervisor B & B,
Chesapeake & Ohio, Richmond, Va.

The safety precautions to be observed in removing concrete forms are much the same as those to be taken when dismantling a building. As such a structure is weakened by removal of member after member, braces and temporary false members must be installed to prevent collapse. The same type of precautions must be used in removing forms.

When tie-rods, wires or whatever type of fastenings used are cut or loosened, necessary temporary strutting or bracing must be used to prevent vertical forms from falling. If the form itself is dismantled by removing joists and waling timbers, workmen are exposed to protruding nails and care must be taken to avoid injury from the nails and splinters. When joists are removed, the pieces of siding or sheeting of the forms may fall and injure workmen below.

Generally speaking, the precautions to be taken in removing concrete forms are not different from the general safety steps necessary in any type of carpenter work.

(Please turn to page 98)



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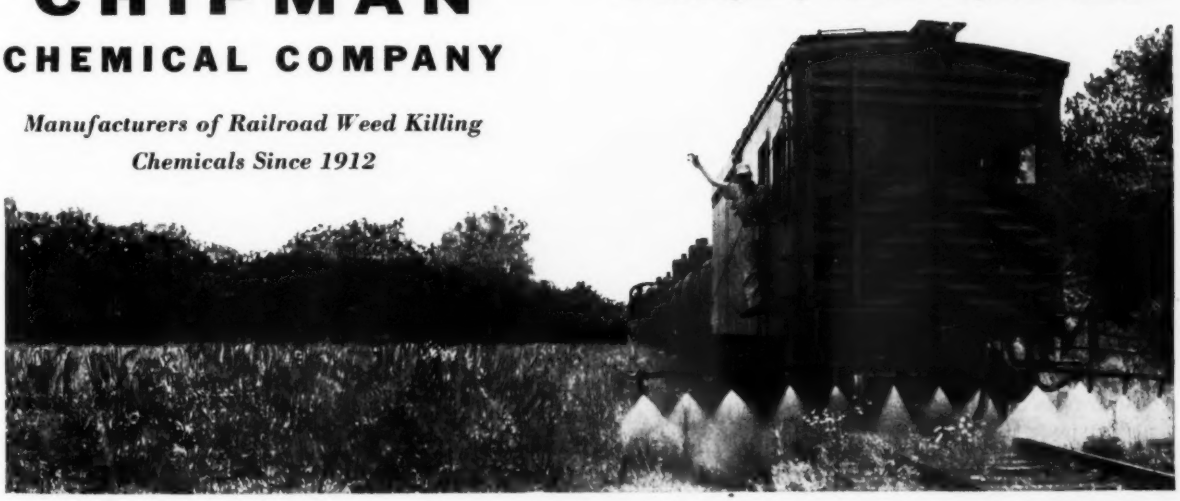

Repair or Replace Valves in the Field?

To what extent is it economical and practicable for water service forces to make repairs to various types of valves? Would it be more economical to replace the entire unit? Explain.

Judgment Important Factor

By I. C. Brown

Water Engineer,
St. Louis-San Francisco, Springfield, Mo.

Considerable judgment is required on the basis of operating conditions. Generally such valve repairs as stem packing, wheel replacements, minor grinding of seats, cleaning and replacement of discs and diaphragms can be made in less time than is required to replace the valve.

All used valves should be reconditioned at a central water-service or reclamation plant equipped with proper tools and machinery for repairing and testing such equipment. A well organized shop can recondition most valves with a real saving as compared with the purchase of new valves.

No General Rule Applies

By George Clark

Engineer of Water Service,
Canadian National, Winnipeg, Man.

There are a great variety of valves used to control the flow and distribution of water, when size and type of design are taken together. We doubt if a general rule regarding the economics of repair replacement would hold true in every instance, or that any line of demarcation could be drawn on the basis of size, whereby we could say that all valves below a certain size should be replaced while others above that size should be repaired.

The main consideration in any water supply set up is that the designing engineer make sure that any valves involved are specified as being the best obtainable for the type of service and duty that they are likely to be called upon to perform. It is fairly obvious that the longest trouble-free service life will ultimately pay off. Many situations exist where the cost of making preparations for repairing or replacing a particular valve may be higher than the price of the valve itself. Furthermore, it may be found that the valve is old and it may not be possible to obtain correctly dimensioned repair parts from stock. A long wait will then be involved until the parts can be manufactured, although a complete new valve might have been available on short notice from stock which is on hand.

The nature of the fault in the valve and the importance of its service function will often determine whether it should be repaired or replaced. Judgment will have to be made in each case on its merits.

A considerable cost for repairs may be incurred in trying to keep a valve functioning because it was wrongly selected for the type of service required in the first place. It would therefore be wise in such cases to change to a new and different design which may have been well tested and proved in similar service by others.

Some valves are designed in such a way that they can be maintained in good operating condition at a minimum cost by replacement of certain wearing parts. It may be wise to use such valves as replacements in cases where some other types of valve has failed or is giving unsatisfactory service.

Hydraulically operated valves in float-valve service, standpipe remote control, and other such applications, as well as pressure control, either pressure reduction or relief, are probably more economically repaired than replaced as their first cost is high and their design generally permits of renewal of wearing parts. Motorized valves, if applied in service appropriate to their particular design would also probably show an economic advantage for making repair rather than replacement.

In borderline situations, where it might be difficult to determine the most economical procedure, we would favor replacement rather than repair for the reason that full advantage can be taken of any improvements developed in design or materials involved and the life of the old parts may have depreciated to the point where trouble might occur before the repaired portions are again in need of replacement.

Transporting Rails Over Highways

Under what conditions would it be economically desirable to transport 39-ft. rails over highways? What equipment is suitable for this purpose? In the absence of a crane what means can be used for loading such rail on the highway equipment? Explain.

Where Terrain Will Permit

By H. B. Orr

Assistant Engineer, Union Pacific, Omaha

Highway transportation can be used to advantage in delivering new rail and picking up used rail and fittings in connection with out-of-face relays. It is difficult to set up an exact measure as to when this operation becomes economically desirable, but it should be considered in any territory where the terrain will permit construction of a working roadway alongside of the track, and where, because of traffic, a work train cannot engage in actual distribution or pick-up operations for at least half the working day.

In a typical setup for making out-of-face distribution by highway, materials are delivered by train to the nearest station where a wagon crane transfers the rails from cars to tractor trucks equipped with pole-carrying trailers with telescopic tongues. Another wagon crane with magnet transfers the fittings from railroad cars to dump trucks. Four rail trucks and four dump trucks are required. On the job, one crawler crane unloads the rail. One Traxcavator makes road where necessary and also assists in distribution of fittings.

In picking up the released materials the same equipment is used. The crawler crane picks up rail and loads on the pole trucks. The Traxcavator loads fittings into the dump trucks. At the station one wagon

(Continued on page 100)

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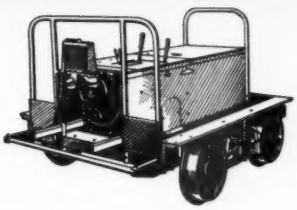

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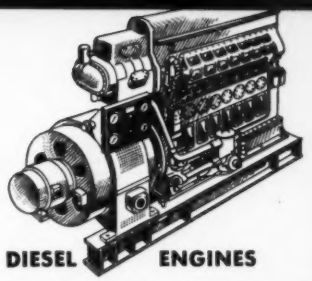

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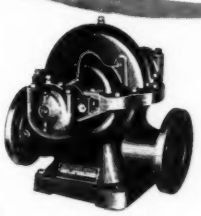

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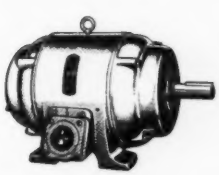

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crane transfers rail from truck to car and the other with magnet transfers fittings from truck to car. This operation requires about twenty men in addition to the equipment operators and under normal working conditions will distribute or pick up approximately one track-mile of rail and fittings per day.

Highway transportation can also be used to advantage in handling individual replacement rails behind detector cars. A tractor truck with power winch, plus a semi-trailer with a capacity for carrying 10 rails is suitable for this purpose. Rail is delivered by train to two or three conveniently located stations and handled from there with the truck and trailer. The released rail is collected for return to terminal points. This method eliminates supply train delivery and push-car handling of the rail.

Where Rail Traffic Is Heavy

By F. J. Corporon

Superintendent Way & Structures,
Chicago, South Shore & South Bend,
Michigan City, Ind.

Ours is a high-speed electric railroad, operating both passenger and freight trains through a congested industrial area. Rail traffic is heavy, with a minimum of 90 trains per day. Since highways closely parallel our line over approximately two-thirds of its length, and since there are many access roads to serve the remainder of the right of way, we find that trucks offer the best solution to the problem of transporting small quantities of rail and other track materials to points where they are needed.

As we have largely abandoned motor cars, due to the heavy rail traffic mentioned above, stocks of rail on rail rests on each section are no longer practical. It is easier, quicker and cheaper in the long run, to haul a rail or rails from a central stock to the point of use by highway trucks, than to rely on sporadically placed rail rests and perhaps an insufficient number of men with a push car and motor car.

It is obvious that small quantities of rail cannot be hauled economically by work train, both because of the high cost of a train and the amount of time lost clearing for other trains. It is equally obvious that, for emergencies or necessary work requiring small quantities of rail, trucks are far more satisfactory than work trains.

In our operations we use a flat-bed truck equipped with a rack mounted at the front of the bed, just behind the cab, permitting rails to be carried along both sides, projecting forward to the front of the truck. In this manner we are able to transport up to six rails with the truck alone. If larger quantities of rail must be moved quickly, we utilize a two-wheel flat-bed trailer, on the bed of which is mounted a wood bolster pivoted in the center. A corresponding bolster is then mounted on the bed of the truck and the rail is loaded on the bolsters. This permits the truck and the trailer to move freely with as many as sixteen 115-lb. 39-ft. rails, secured by load binders. In this connection, it might be well to mention that most states have laws regulating weights and sizes of highway loads. These laws should be studied and necessary permits secured before adopting this method of handling rails.

Normally a truck-crane is used to load rail. However, we occasionally use the rail loader (rail mounted) in our material yard for this purpose, or we may load a few rails by pulling them with the truck winch and skidding them up a plank onto the truck bed. On rather rare occasions we revert to manpower, with a gang of men lifting one end of a rail onto the truck bed and guiding it with tongs while the truck backs under it; this is not, of course, recommended practice.

In summation, the questions which have been advanced may, from our point of view, be answered as follows:

1. It may be economically desirable to transport 39-ft. rails over the highways if:
   (a) Rail traffic makes motor cars and push cars for the handling of local rail stocks undesirable.
   (b) Highways or access roads are close to the railroad right of way.
   (c) Small quantities of rail are to be moved.
2. Items of equipment suitable for this purpose are:
   (a) Flat-bed truck with rail rack and winch.
   (b) Trailer and bolsters for use with flat-bed truck.
3. In the absence of a crane, other methods of loading rail on highway equipment would be:
   (a) Any other hoisting device capable of lifting rail while the truck backs under it.
   (b) Winch and skid.
   (c) Gang labor.

Remove Obsolete Servicing Facilities?

When coaling stations and other servicing facilities are rendered obsolete by dieselization should they be dismantled or left intact? What are the advantages and disadvantages of these alternatives? Explain.

Save Maintenance and Taxes

By E. S. Birkenwald

Engineer of Bridges,
Southern, Cincinnati

Coaling stations and other servicing facilities should be dismantled whenever rendered obsolete by dieselization. Usually the salvage recovered will more than cover the cost of dismantling. Savings in maintenance and taxes will result from the physical retirement of these facilities, which if left intact are of no value and may interfere with yard rearrangements and the installation of other facilities. The longer a facility is left intact, the more expensive it will be to dismantle. An abandoned facility, not removed, may create a hazard to safety and other property if not maintained.

Remove Those of Wood and Metal

By L. L. Adams

Chief Engineer,
Louisville & Nashville, Louisville

When coaling station facilities are rendered obsolete by dieselization all such structures of wood and metal should be dismantled and disposed of to the best advantage. In case of concrete coaling stations the machinery should be removed, but where the concrete bin does not interfere in any way with operation I see no reason why it cannot be left in place to save the cost of removal. At certain locations where there is interference, such concrete structures should be demolished and removed.

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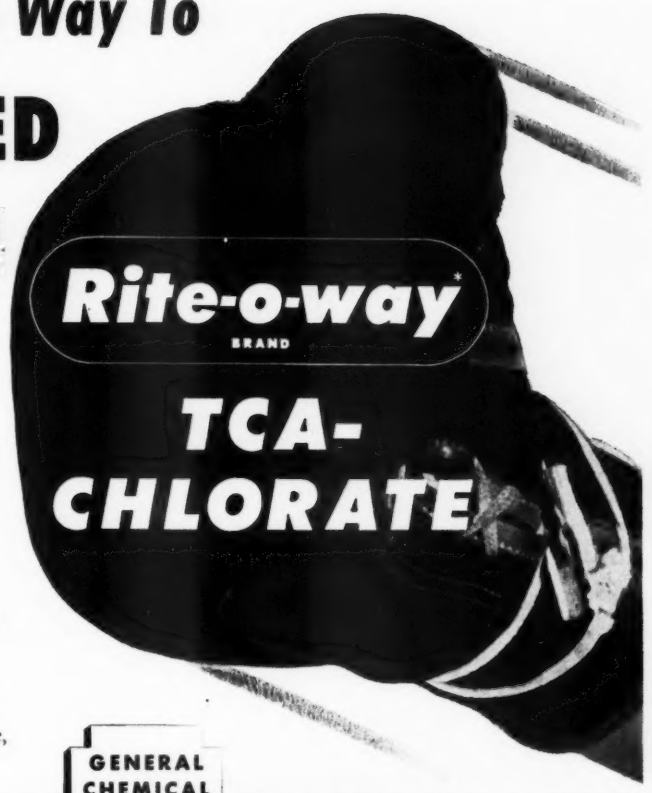

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THE MONTH'S NEWS...

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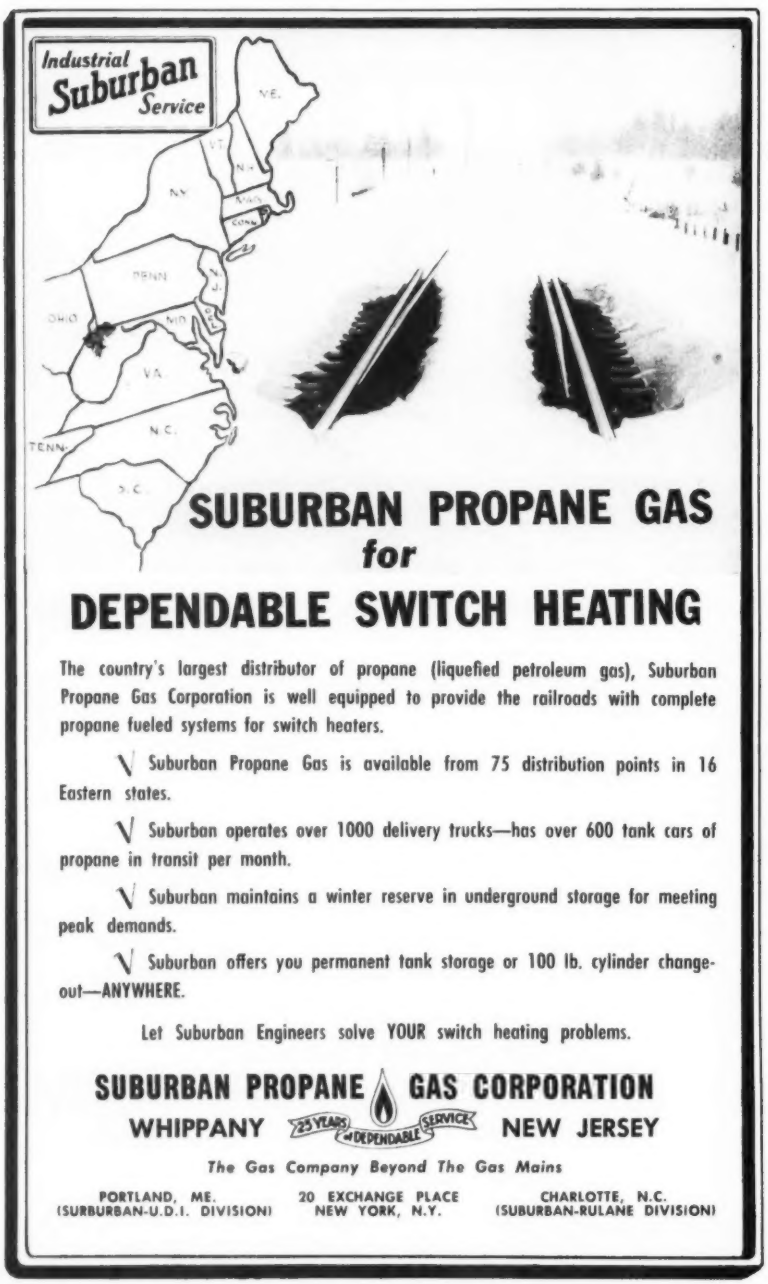
Changes in Railway Personnel

General

C. R. Lapeza, assistant to the general manager of the Atlantic Coast Line, and an engineer through training and experience, has been appointed assistant to the president with headquarters continuing at Wilmington, N. C.

Harold E. Carter, roadmaster on the Norfolk & Western at Petersburg, Va., has been appointed assistant superintendent of the Radford division at Roanoke, Va.

Howard C. Kohout, trainmaster on the Delmarva division of the Pennsylvania at Cape Charles, Va., and an engineer through training and experience, has been promoted to assistant superintendent on the Eastern division at Conway, Pa.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CHARLOTTE, N.C. (SUBURBAN-RULANE DIVISION)

H. A. Spruill, supervisor of track on the Pittsburgh division of the Pennsylvania at Cresson, Pa., has been appointed supervisor of community relations, office of the vice-president, Central region.

Engineering

Clinton A. Plumly, principal assistant engineer on the Maine Central at Portland, Me., has retired after 44 years of service. **Charles G. Rivers,** supervisor of track at Waterville, Me., has been promoted to general engineer in charge of the general engineering subdepartment at Portland.

Curtis H. Chapman has been appointed valuation engineer on the New York Central at Cleveland, Ohio, to succeed **Nelson Wing,** who has retired.

H. L. Purdy, junior assistant engineer on the Canadian National, has been promoted to assistant division engineer on the Moncton division, with headquarters at Moncton, N. B.

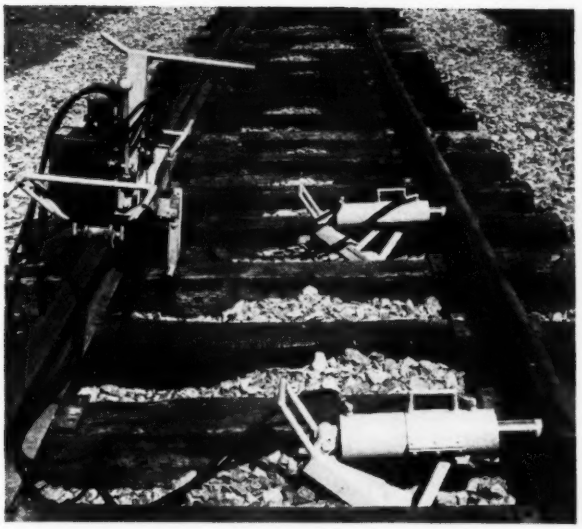
M. C. Taylor, supervisor of work equipment, has been appointed engineer of work equipment for the L&N at Louisville. **A. B. Ryan,** architectural draftsman, has been promoted to chief architectural draftsman, at Louisville.

Everett E. Earl, whose appointment to the newly created position of assistant to chief engineer, Southern Pacific, at Los Angeles, was announced recently (RT&S, Feb. 1954, p. 67), joined the Southern Pacific in 1905 as a member of a surveying gang. He became assistant engineer in 1917 and later held the position of roadmaster on the Shasta, Western, and Los Angeles divisions. In 1939 he was appointed superintendent of construction for the relocation of track

Everett E. Earl

around the site of Shasta dam. He was promoted to general track supervisor for the Pacific Lines in 1940 and a year later became division engineer. In 1952 he was appointed assistant chief engineer of the SP's subsidiary lines the Pacific Electric Railway, the position he held at the time of his recent appointment.

(*Please turn to page* 104)



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When lining freshly raised track, one ram is sufficient. When lining thru switches, road crossings or heavy curves, it may be necessary to use both rams. This will depend entirely upon existing conditions, or the judgement of the foreman in charge of the job.

The machines in service are operated with five laborers and one foreman; one man at machine, one man on each ram and two men digging out the cribs to set the ram.

SPECIFICATIONS

Length 54″	**Width 24″**
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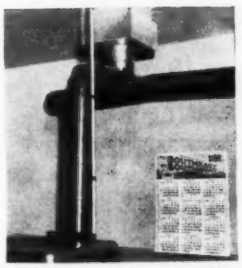

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Railway Personnel (cont'd)

Earl G. Brisbin, division engineer on the Michigan Central at Jackson, Mich., has been appointed engineer maintenance of way of the Pittsburgh & Lake Erie with headquarters at Pittsburgh.

P. E. Brammer, assistant terminal trainmaster on the Chesapeake & Ohio, and **R. W. Vawter,** transportation inspector, have been appointed special engineers-operations with headquarters as before at Huntington, W. Va.

A. O. Jones, assistant division engineer on the Chesapeake & Ohio at Hinton, W. Va., has been promoted to division engineer at Detroit, Mich., to succeed **R. T. Guest,** who has resigned. **J. D. Ferguson,** supervisor of bridges and buildings at Hinton, has been appointed assistant division engineer to replace Mr. Jones.

Robert H. Smith, Jr., whose promotion to assistant division engineer on the Eastern division of the Pennsylvania at Pittsburgh, Pa., was announced recently (RT&S, February, p. 67), was born on August 5, 1917, at Pulaski, Va., and was graduated from Princeton university in 1938, and from Harvard Business School with a M.B.A. degree in 1940. He began his railroad career in June of the latter year as an engineering apprentice on the PRR at Trenton, N. J. In 1941 he was furloughed for service with the United States Army. Upon his return to the railroad in 1946, Mr. Smith was appointed assistant supervisor of track at Aspinwall, Pa., later that year transferring to Perryville, Md. In 1947 he was promoted to supervisor of track, in which capacity he served, successively, at Toledo, Ohio, Philadelphia, Pa., Reading, Pa., Camden, N. J., and Derry, Pa. It was at the last-named location that he received his recent promotion.

Charles J. Code, whose advancement to assistant chief engineer—engineer of tests of the Pennsylvania was announced recently (RT&S, Feb. '54, p. 67), was born at LaCrosse, Wis., on March 9, 1900, and was graduated from Carnegie Institute of Technology with a B. S. degree in civil engineering in 1921 and a C. E. degree in 1925. He began his career with the PRR as a draftsman in June 1920, and, following service as a clerk and a rodman, was appointed assistant supervisor of track on the Monongahela division in August 1923. In October 1926 he was promoted to supervisor of track on the Allegheny division,

Charles J. Code

being transferred to the Middle division on January 1, 1928. Two years later Mr. Code was advanced to division engineer on special duty in the office of the chief engineer, being transferred to the Renovo division in June 1931 and thence to the Panhandle division in July 1933. He was further promoted to assistant to the chief engineer maintenance of way of the Central region at Pittsburgh in July 1937, in which capacity he served until November 1941, when he was appointed engineer of tests, maintenance of way—the position he held at the time of his recent promotion.

Leo W. Green, who was recently promoted to assistant chief engineer, maintenance of way, of the Central region of the Pennsylvania at Pittsburgh, Pa. (RT&S, February, p. 67), was born on January 14, 1909, in Grant County, Ind., and was graduated in civil engineering from Purdue university in 1930. He began his career with the PRR on June 20 of the latter year as an assistant on the engineering corps at Lewistown, Pa. Following a short period as assistant super-

(*Continued on page* 106)

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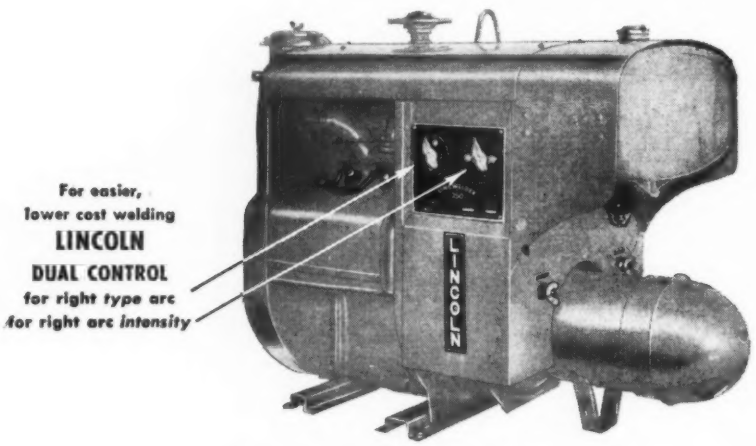

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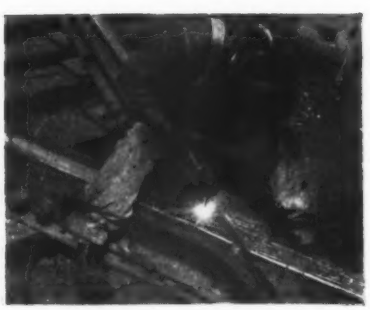

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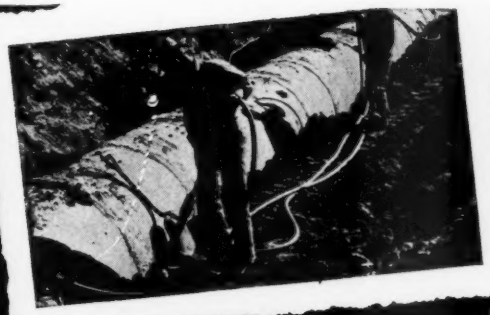

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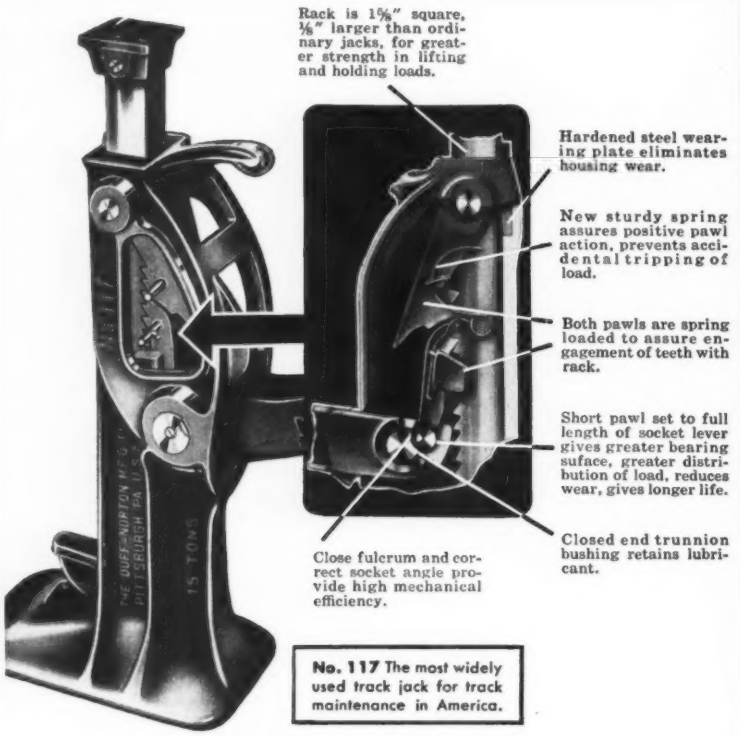
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Railway Personnel (cont'd)

visor of track at Lock Haven, Pa., he returned to his former position at Northumberland, Pa., on October 5, 1931, and was subsequently transferred in that capacity to Downingtown, Pa. From June 1, 1933, to February 19, 1934, he served as project engineer for the Indiana State Highways at Petersburg, Ind., following

Leo W. Green

which he again returned to his former position on the PRR at Harrisburg, Pa., being advanced to assistant supervisor of track on March 31, 1934. On January 31, 1938, he was promoted to supervisor of track. Following his promotion to assistant division engineer at Altoona, Pa., on June 30, 1945, he was made division engineer at Cape Charles, Va., on January 15, 1946, later transferring to Columbus, Ohio, and New York. It was at the latter location that he received his recent appointment.

C. E. Hise, whose promotion to assistant to chief engineer of the Chicago & North Western was announced recently (RT&S, Feb., p. 68), entered the service of the North Western in 1912 as a tape-

C. E. Hise

man and later held positions of rodman, instrumentman, draftsman, and assistant engineer. In 1936 he was appointed principal assistant engineer of

(*Continued on page* 108)

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Railway Personnel (cont'd)

the Chicago, St. Paul, Minneapolis & Omaha, a North Western subsidiary, and became assistant chief engineer of that company in 1941. Upon his return from military service he was made division engineer on the Eastern division of the North Western and in 1948 division engineer on the Galena division. He was appointed office engineer in 1950 and held this position up to the time of his recent promotion.

John F. Davison, whose promotion to assistant to chief engineer of the Canadian National was announced recently (RT&S, Feb., p. 68), is a native of Winnipeg, Man., and joined the CNR there in 1929 as a chainman in the division

John F. Davison

engineers' office. Since then he has held engineering positions with the railway at Montreal, Vancouver, B.C., North Bay, Ont., and Levis, Que.

Joseph Conrad, whose appointment as engineer maintenance of way for the Canadian National was announced recently (RT&S, Feb., p. 68), was born in Switzerland and came to Canada as a

Joseph Conrad

youth. He began his railroad career as a rodman with the CNR in 1928, and held various engineering positions until becoming district engineer in 1950.

T. M. Mouring has been appointed chief engineer of the Maryland & Pennsylvania at Baltimore, Md., to succeed **E. E. McLellan,** who has retired after more than 38 years of service.

George L. Davenport, Jr., hydraulic engineer for the Santa Fe at Los Angeles has been promoted to assistant to chief engineer at that point.

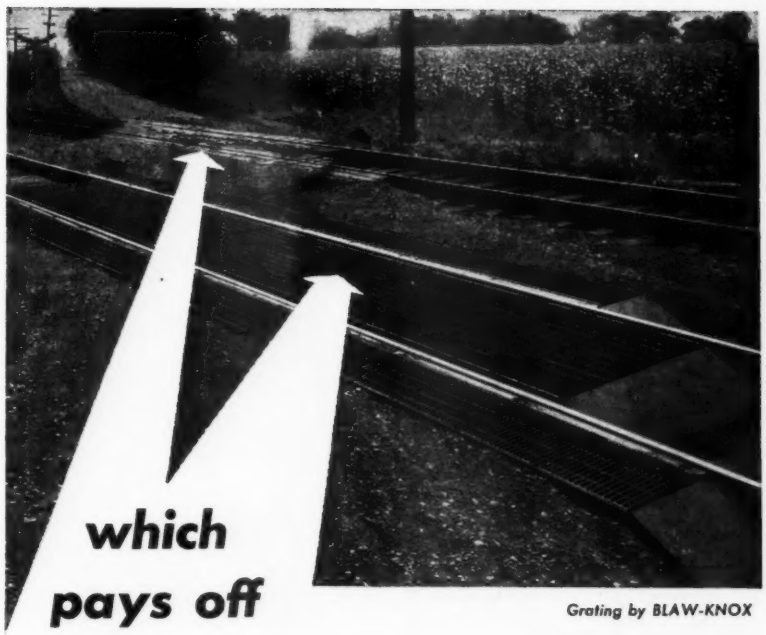
W. H. Huffman, whose promotion to assistant engineer of maintenance of the Chicago & North Western was announced recently (RT&S, Feb., p. 68), began his service with the North Western as a rodman in 1929 after receiving his master's degree from Purdue university. Subsequently, he served as instrumentman, engineering accountant and assistant engineer. In 1943 he was appointed

W. H. Huffman

acting division engineer, and later division engineer. He became assistant to chief engineer in April, 1952, the position he was holding at the time of his recent promotion.

Robert J. Klueh, who has been promoted to engineer of bridges on the New York Central, with headquarters at New York (RT&S, February, p. 67), was born at New York on April 25, 1909. Following his graduation in civil engineering from New York University in 1932, he entered the employ of the NYC as a chainman at New York, where he subsequently served as rodman, instrumentman, junior engineer and designer and detailer, all in the office of the district engineer. In October 1941 Mr. Klueh was transferred to the division engineer's office, and a year later was promoted to assistant supervisor of track, in which capacity he served successively at Syracuse and New York. In October 1949 he was advanced to supervisor of track at Wellsboro Junction, Pa., and in April 1952 was named assistant engineer of bridges—the position he held at the time of his recent promotion.

Charles E. O'Connor, whose promotion to engineer of bridges on the New York Central at Cleveland, Ohio, was recently announced (RT&S, February, p. 68), was born at Holyoke, Mass., on January 7, 1904, and was graduated in



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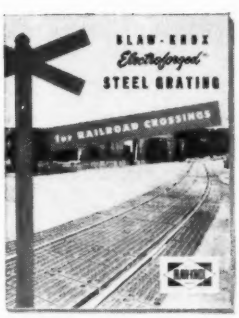

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civil engineering from Clarkson College of Technology in 1927. Entering the service of the NYC on May 1, 1943, Mr. O'Connor's entire railroad experience has been in the bridge department at Cleveland as designer and assistant engineer, prior to his recent promotion.

Benjamin Chappell, whose appointment as assistant chief engineer for the Canadian National, Western Region, was announced recently (RT&S, Feb., p. 68), began his CNR career in 1919 as a

Benjamin Chappell

freight porter. Later he joined the engineering department as a bridgeman, and subsequently served as chainman and instrumentman. In 1944, he was appointed division engineer, and two years later became engineer of track. He was promoted to district engineer in 1948, and became engineer maintenance of way in 1950.

Lewis M. Swoap, whose promotion to division engineer of the Terminal division of the Erie at Jersey City, N. J., was announced recently (RT&S, January, p. 74), began his career with that road

Lewis M. Swoap

on January 23, 1918, as head of corps on the Marion division at Huntington, Ind. On July 21, 1918, he entered the service of the U.S. Army, returning to Huntington as a transitman on April 1, 1919. He subsequently served as head of corps on the Marion division, at Marion, Ohio,

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until April 16, 1927, when he was appointed assistant engineer on that division. On March 1, 1928, Mr. Swoap was named assistant division engineer of the Meadville division at Meadville, Pa., which position he held until December 31, 1931, when he was made head of corps of the Meadville division, in which capacity he subsequently served, at Salamanca, N. Y., and on the Kent division at Marion, Ohio, until November 1, 1946, when he was appointed office engineer of the Western district at Youngstown, Ohio. On November 1, 1950, he was appointed construction supervisor at the latter location, and the following year was named assistant division engineer of the New York division at Jersey City—the position he held prior to his recent promotion.

Nicholas V. Back, who was recently appointed chief engineer of the Toronto, Hamilton & Buffalo at Hamilton, Ont. (RT&S, February, p. 67), was born on December 10, 1903, at St. Philip, Hungary, and was graduated in civil engineering from Pennsylvania State college in June 1926. He began his railroad career on October 1, 1929, as an engineering draftsman on the New York Central at New York, where he was appointed designer and detailer on March 15, 1930, and assistant engineer on April 16, 1939. Furloughed for military service on December 16, 1943, Mr. Back served in the United States and E.T.O. as B. & B.

Nicholas V. Back

platoon commander, maintenance-of-way company commander, 735th Railway Operating Battalion, and as engineer of railway bridges with the 2nd Military Railway Service, American Occupied Zone, Germany. Following his discharge on June 1, 1946, as a major in the transportation corps of the U. S. Army Reserve, he returned to his former position as assistant engineer on the NYC. On December 11, 1950, he was appointed engineer maintenance of way for the TH&B—the position he held at the time he received his recent promotion.

Malcolm E. Condon, whose promotion to assistant division engineer on the New York division of the Erie at Jersey City, N. J., was announced recently (RT&S, January, p. 74), was born at Elmira, N. Y., on June 8, 1908, and attended Syracuse university, where he majored in electrical engineering. He entered the employ of the Erie as a trackman at Elmira on June 2, 1931. Following his transfer to Hornell, N. Y., as a rodman on the engineering corps in 1933, he served successively as levelman, transitman and chief of corps at Hornell, Dunmore, Pa., and Jersey City until 1945, when he was appointed general yard foreman at Croxton, N. J. The following year Mr. Condon was made supervisor of track, in which capacity he served, consecutively, at Campbell Hall, N. Y., Dunmore, Pa., Marion, Ohio, and North Newark, N. J. In 1950 he was named construction supervisor of the Eastern district at Jersey City, and in 1952 returned to Croxton as general yard foreman—the position he held at the time he received his recent promotion.

Lendall R. Mattice, who was recently appointed assistant engineer of the New Hampshire division of the Boston & Maine at Concord, N. H. (RT&S, January, p. 64), was born at Penacook, N. H., on December 17, 1920. He entered the employ of the B&M in January 1944 as a chainman at Concord, where he subsequently served as rodman and transitman until April 15, 1948, when he was appointed cost engineer at Boston, Mass. On June 1, 1952, he was named assistant bridge and building supervisor at Concord.

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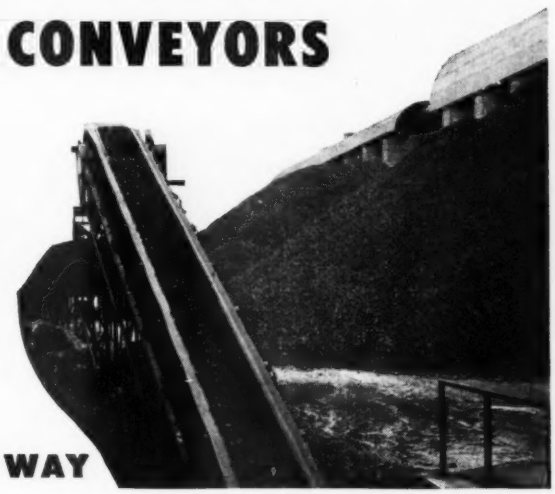

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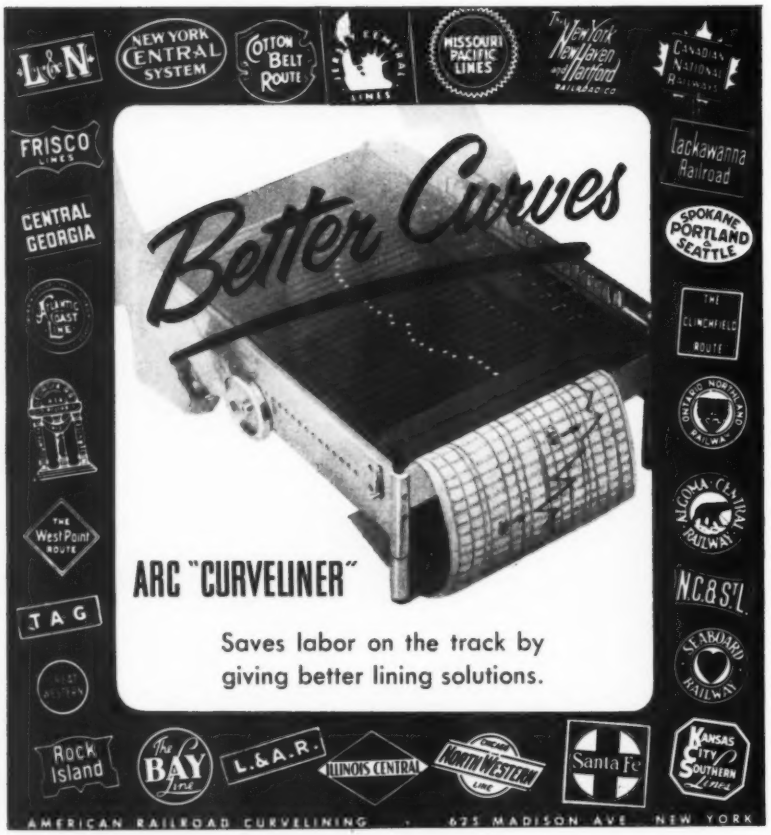

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Railway Personnel (cont'd)

Thomas W. Roby, valuation engineer for the Seaboard Air Line at Norfolk, Va., has retired after 40 years of service. He has been succeeded by **Jean Jones,** assistant valuation engineer.

Mr. Roby was born on January 6, 1884, at Jacksonville, Fla., and was graduated in 1904 from Virginia Mili-

Thomas W. Roby

tary Institute and in 1907 from Massachusetts Institute of Technology, holding B.S. degrees in civil engineering from both institutions. Commencing his engineering career, Mr. Roby served in various capacities with consulting firms until 1914, when he became associated with the Seaboard as assistant engineer in its newly formed valuation department. He was appointed administrative member of the railroad's valuation committee in 1918, and became valuation engineer in charge of valuation work for the Seaboard and its entire system in 1927. He was appointed chief of research and planning in 1947 and held that position until the work was completed in 1949, when he was again named valuation engineer with somewhat expanded responsibilities.

Jean Jones

Mr. Jones is a native of Arkansas and received his higher education at the University of Arkansas and at George Washington University. Before his connection

(*Continued on page* 114)

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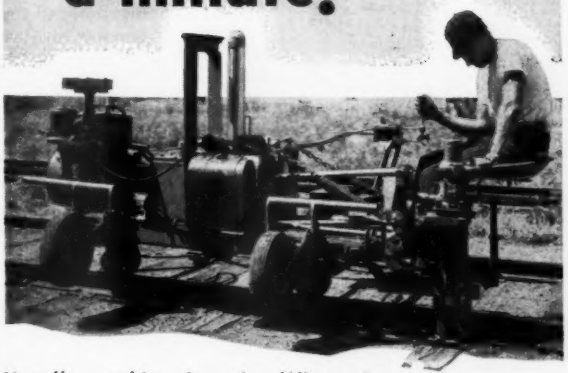
Stops Rot and Termites

WISCONSIN-Powered Spike Puller Pulls 25 Spikes a minute!



Usually working in pairs, Wisconsin-powered Fairmont Spike Pullers, pulling spikes on both sides of the rails, can handle the needs of of a 75-man gang.

The above scene is typical of many maintenance-of-way jobs that are handled most advantageously by Wisconsin-powered equipment — cutting operating costs and getting the most out of your manpower. Pace-setting machines, like this one, keep the work rolling on schedule — and the rugged, heavy-duty construction of the Wisconsin Power Unit cuts equipment maintenance time to an absolute minimum. Your Wisconsin-powered equipment stays on the job instead of in the shop.

Every Wisconsin Air-Cooled Engine, from the 3 hp. Model ABN to the 36 hp. Model VG4D runs on tapered roller bearings at BOTH ends of the crankshaft — the best protection against bearing failure. This also permits mounting drive pulleys, gears or sprockets directly on the extended crankshaft because all radial and end thrusts are taken up by the self-cleaning tapered bearings.

Dependable, sure-firing ignition is another Wisconsin point to remember. The rotary type high tension magneto is mounted on the OUTSIDE where it is free from oil, grease and dirt and readily accessible for adjustment and servicing. Equipped with Impulse Coupling for fast starts at any season, in any weather.

For the greatest power advantage at lowest operating and maintenance costs, specify "Wisconsin Power" for your equipment — 4-cycle single cylinder, 2- and 4-cylinder models, 3 to 36 hp. Descriptive data gladly supplied.

Single-cylinder, 3 to 9 hp.

2-cylinder, 7 to 15 hp.

V-type 4-cylinder, 15 to 36 hp.

Power TO FIT THE JOB

Power TO FIT THE MACHINE

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

Railway Personnel (cont'd)

with the Seaboard he had been affiliated with the United States Army Corps of Engineers and with the Bureau of Valuation of the Interstate Commerce Commission.

A. K. Rowntree, roadmaster on the Canadian Pacific at Sherbrooke, Que., has been promoted to division engineer on the London division at London, Ont. **William Munford** has been appointed special engineer in the office of the vice-president and general manager at Toronto, Ont., to replace **Harry R. Wootton. Gerry C. McDonald,** assistant engineer in the general superintendent's office at Saint John, N. B., has been named roadmaster to succeed Mr. Rowntree, and Mr. Wootton, in turn, has replaced Mr. McDonald at Saint John.

Track

J. W. Loftus, roadmaster on the Milwaukee, has been transferred from St. Maries, Ida. to Yankton, S. D., to replace **A. W. Bahr,** deceased. **Elmer Lottes** has been appointed roadmaster at St. Maries, succeeding Mr. Loftus.

Emil Walfridson has been transferred to Regina as roadmaster of the Tyvan and Kisby subdivisions of the Canadian Pacific succeeding **Joseph Halasa,** who has retired. **Josef Safstrom** has been promoted to roadmaster at Rosetown replacing Mr. Walfridson. **T. F. Pass** has been made assistant roadmaster at Regina succeeding Safstrom.

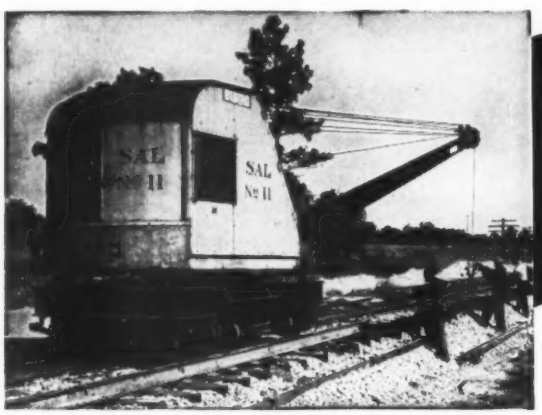
Emerson M. Bissinger, whose promotion to supervisor of track on the Panhandle division of the Pennslyvania at Carnegie, Pa., was announced recently (RT&S, December p. 1190), was born at West Union, Ohio, on June 1, 1925, and was graduated in civil engineering from Ohio University in June 1950. For three years prior to graduation, he worked for the PRR during vacations as a chairman at Anderson, Ind. In July 1950 he entered into full-time service with that road as a junior engineer of track at Terre Haute, Ind., and on June 1, 1951, was made assistant supervisor of track, main line, Eastern division, at Mansfield, Ohio—the position he held prior to his recent promotion.

E. Rholloff has returned to his position as roadmaster on the Rock Island at Estherville, Iowa, replacing **H. T. Kelso,** who was serving in Mr. Rholloff's absence.

Wayne Smith has been appointed supervisor of track on the Louisiana division of the Illinois Central at Hammond, La., replacing **Oscar Smith,** who has retired. **C. B. Campbell** has been appointed supervisor of track for the Illinois division at Matoon, Ill., replacing Mr. Smith. **H. F. Longhelt** has been appointed supervisor of track at Bloomington, Ind., replacing Mr. Campbell, and **T. F. Kenney** has been made supervisor of track for the St. Louis division at Carbondale, Ill., replacing Mr. Longhelt.

R. E. Kleist, supervisor of track on the Southwestern division of the Pennsylvannia at Terre Haute, Ind., has been transferred to the Maryland division at Wilmington, Del., to succeed **Edward Wollett, Jr.,** who, as announced elsewhere in these columns, has been promoted to assistant division engineer at Fort Wayne, Ind. **L. E. Ward,** supervisor of track on the Delmarva division at Cape Charles, Va., has been moved to Terre Haute to replace Mr. Kleist, and **C. G. Knight,** assistant supervisor of track on the Pittsburgh division at Cresson, Pa., has been advanced to supervisor of track at Cape Charles. **J. S. Collins,** Junior engineer of track on the Middle division at Lewistown, Pa., has been promoted to assistant supervisor of track on the New York division at Jamesburg, N. J., to succeed **M. J. Sheridan,** who has been moved to Cresson. **R. L. Stevens,** assistant supervisor of track on the Susquehanna division at Northumberland, Pa., has been transferred to the Panhandle division at Dennison, Ohio, to replace **W. D. Streiff,** who has been advanced to supervisor of track on that division at Benwood, W. Va., and **E. C. Rudolph,** junior engineer of track on the Columbus division, has been promoted to assistant supervisor of track at Northumberland. **G. S. Lehman,** supervisor of track at

(*Continued on page* 116)



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We call Burro Cranes "Railroad Specialists" because they do so many railroad jobs so well. Track work, bridge work, bulk materials handling, Mechanical Stores Department, material handling with or without magnet, are only a few jobs Burro does with speed and economy. Burro Cranes are designed for railroad work—not adapted to it. Watch a Burro work and see why it's called on to do so many jobs by most of the country's railroads.

Only **BURRO CRANES HAVE:**

- Fast travel speeds—up to 22 M.P.H.
- Draw Bar Pull of 7500 lbs. (often eliminates need for work train or locomotive).
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- Short tail swing—will not foul adjoining track.
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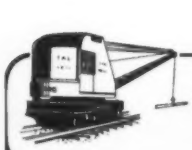

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with OSMOPLASTIC TIE PRESERVATIVE

4 WAY CHEMICAL ACTION of this *proven* deep-penetrating wood preservative combats spike pull, reduces plate cutting, hardens wood, seals out moisture and grit and actually REINFORCES decay prevention quality of creosote in ties. Just BRUSH IT ON tie plate areas of new ties, readzed surfaces of used ties, and on splits and derailment scars of in-service ties. Then, they'll LAST YEARS LONGER and drastically cut costs. Recommended for M/W Engineers from coast to coast.

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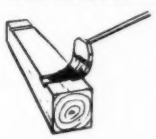

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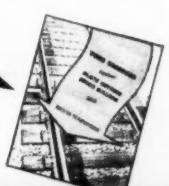

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Railway Personnel (cont'd)

Benwood, has been transferred to the Southwestern division at Greenville, Ill., to replace **W. S. Titlow,** who has been moved to the Pittsburgh division at Derry, Pa., to succeed **R. H. Smith, Jr.,** who, as noted elsewhere in these columns, has been promoted to assistant division engineer at Pittsburgh, Pa.

Mr. Knight was born at Philadelphia, Pa., on August 21, 1925, and was graduated in civil engineering from Lehigh University in 1949. He entered the service of the PRR on June 21 of the latter year as a junior engineer at Wilmington, Del., and was transferred to Lock Haven, Pa., in 1950. Advanced to assistant supervisor of track at York, Pa., in 1951, Mr. Knight was later transferred to Cresson, Pa.

Mr. Streiff was born at Centerville, Iowa, on February 7, 1926, and was graduated in civil engineering from Iowa State College in December 1948. Entering the service of the PRR as a junior engineer at Trafford, Pa., on January 3, 1949, he was advanced to assistant supervisor of track at Cleveland, Ohio, on November 1, 1950, and the following year was transferred to Dennison, Ohio, where he was located when he received his recent promotion.

W. A. Kusnerek has been appointed assistant supervisor-track on the Panhandle division of the Pennsylvania, succeeding **R. H. Neely,** who has resigned. **C. R. Spence** has been promoted to assistant supervisor-track on the Columbus division, succeeding **J. F. Youngstrom.**

J. S. Bradshaw, roadmaster on the Norfolk & Western at Portsmouth, **Ohio,** has been promoted to assistant manager of roadway maintenance to succeed the late **S. J. Hale, B. H. Lester,** roadmaster at Pulaski, Va., takes over Mr. Brawshaw's position as roadmaster at Portsmouth, while **G. W. Gearhart,** roadmaster at Wilcoe, W. Va., succeeds Mr. Lester. **H. R. Leftwich,** roadmaster at Chillicothe, Ohio, has been transferred to Petersburg, Va., to succeed **Harold E. Carter,** who, as announced elsewhere in these columns, has been appointed assistant superintendent of the Radford division at Roanoke, Va., and **Troy Hardin,** assistant roadmaster at Williamson, W. Va., has been promoted to roadmaster at Chillicothe to replace Mr. Leftwich. **C. G. Hammond, Jr.,** assistant roadmaster at Fort Gay, W. Va., has moved up to the post of roadmaster at Wilcoe to succeed Mr. Gearhart; **E. C. Smith,** assistant roadmaster at Sardinia, Ohio, has been transferred to Fort Gay; and **Edward B. Lee,** inspector, office of manager roadway maintenance, has been promoted to assistant roadmaster at Sardinia.

Mr. Hammond was born on June 15, 1921, at Roanoke, Va., and was graduated in civil engineering from Virginia Polytechnic Institute in 1947. He began his railway career in January 1941 as a laborer in the roadway material yard of the N&W at Roanoke, and subsequently served as a chainman in the engineering department at Christiansburg, Va., until May 1943, when he was furloughed for military service and to attend school. Returning to the railroad in July 1947, Mr. Hammond was appointed inspector in the engineering department at Bluefield, W. Va., and in October 1948 was transferred to Roanoke as inspector in the office of the manager of roadway maintenance. In August 1949 he was named assistant roadmaster at Fort Gay, W. Va.,—the position he held at the time of his recent promotion.

J. B. Hantranft, assistant supervisor of track on the Maryland division of the Pennsylvania at Perryville, Md., has been promoted to supervisor of track on the Conemaugh division with headquarters at Kittanning, Pa., to succeed **P. N. Kulick,** who has been transferred to the Pittsburgh division at Cresson, Pa., to replace **H. A. Spruill,** who, as noted elsewhere in these columns, has been appointed supervisor of community relations, office of the vice-president, Central region. **F. R. Call,** assistant supervisor of track on the Conemaugh division at Aspinwall, Pa., has replaced Mr. Hantranft at Perryville, and **C. L. Tracey,** junior engineer on the Fort Wayne division, has been promoted to assistant supervisor of track to succeed Mr. Call at Aspinwall.

W. Carl Swann, supervisor of track on the Southern at Valdosta, Ga., has been transferred to Hot Springs, N. C., to suc-

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the process that cuts fire loss and weather deterioration

LIBBEY-ZONE protected structures resist weather deterioration and these installations provide years of efficient protection without attention or repair.

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LIBBEY-ZONE applications are made without traffic disruption; require little time and no special equipment or trained personnel.

The picture shows some of the physical damage to a through-line bridge of a major railroad as it burned recently near Chicago. What the picture does *not* show, is the disruption of schedules and the cost of repair and replacement. If this bridge has been LIBBEY-ZONE Process treated, chances are, it *would not have burned and would be standing today.*

Easy-to-apply LIBBEY-ZONE HEAVY DUTY coating and gravel aggregate is the proved answer to effective fire prevention for wooden railway structures. The LIBBEY-ZONE Process can be applied directly from the drum, without preheating . . . and the work is done by unskilled help. Important, too, test applications of the LIBBEY-ZONE Process made over ten years ago, show virtually no weathering effect after exposure to every imaginable type of weather.

Investigate the LIBBEY-ZONE Process. The facts and the proof of performance are your without obligaiton. Learn for yourself how this process can cut fire loss on your road. Write today for our free booklet.

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ceed **Clyde H. Hazelwood,** who has retired after 48 years of service. **Royce D. Moon,** track supervisor at Cordele, Ga., who has been transferred to Valdosta, has been succeeded at Cordele by **Paul A. Perkins,** track supervisor at Sylva, N. C., and **William M. Burnette,** student apprentice, has been promoted to supervisor of track at Sylva to replace Mr. Perkins.

W. M. Dowdy, assistant cost engineer on the Chesapeake & Ohio, has been appointed assistant supervisor of track, at Newport News, Va.

J. W. Kelley has been appointed roadmaster on the Burlington at Lincoln, Neb., replacing **J. Pickrel,** deceased. **D. E. Henry,** has been appointed acting roadmaster at Galesburg, Ill., replacing **L. F. Drake** who is on leave of absence because of illness. **C. E. Lane** has been made roadmaster at Centralia, Ill., replacing Mr. Henry.

Harry W. Stetson, general supervisor, maintenance of way, on the Maine Central at Portland, Me., has retired after 52 years of service. **Maurice S. Thorne,** supervisor of track on the Calais branch with headquarters at Bangor, Me., has been transferred to Waterville, Me., to succeed **Charles G. Rivers,** who, as announced elsewhere in these columns, has been promoted to general engineer in charge of the general engineering subdepartment at Portland. Mr. Thorne has been replaced on the Calais branch by **Forrest B. Perkins,** formerly extra crew foreman.

Bridge and Building

R. P. Wilson, assistant supervisor of bridges and buildings on the Chesapeake & Ohio, has been advanced to supervisor of bridges and buildings with headquarters as before at Hinton, W. Va., to succeed **J. D. Ferguson,** who, as announced elsewhere in these columns, has been promoted to assistant division engineer at Hinton.

H. C. Martin, treating supervisor at the timber preserving plant of the Norfolk & Western at Radford, Va., has been promoted to superintendent of the plant to succeed **W. E. Kemp,** who has retired because of physical disability, after 33 years of service with the N&W. **W. A. Clark, Jr.,** inspector with the maintenance of way testing engineer at Roanoke, Va., has been promoted to treating supervisor to succeed Mr. Martin.

Mr. Martin, a graduate of North Carolina State College in forestry, was first employed by the N&W in August 1941 as chainman in the engineering department at Portsmouth, Ohio. After two and a half years in military service he returned to the railway and was promoted to rodman in July 1946, going to the timber preserving plant as inspector in August 1947. He was advanced to treating supervisor in July 1949.

Mr. Clark is a graduate of Roanoke College, and since joining the railway in 1941 has spent most of his career in the engineering department, serving as chainman, rodman and inspector at Winston-Salem, N. C., and Roanoke.

K. B. Truax has been appointed bridge and building master on the Laurentian division of the Canadian Pacific, with headquarters at Montreal, Que., to succeed **J. N. McConnell,** who has retired.

H. S. Hildebrand, supervisor of structures on the Northern division of the Pennsylvania at Buffalo, N. Y., has been transferred to the Columbus division at Columbus, Ohio, to replace **W. E. Meredith,** who has been moved to the Southwestern division at Indianapolis, Ind., to succeed **C. D. Howell,** who has retired.

E. Watson, Jr. has been appointed supervisor of structures at Buffalo.

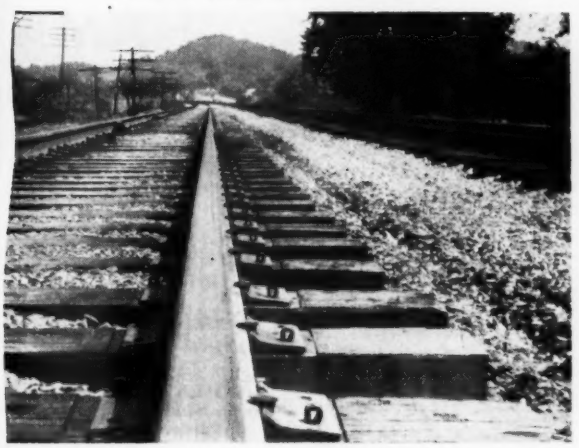
Special

Raymond A. Coulombre has been appointed supervisor of work equipment on the Maine Central at Waterville, Me., to succeed **Harold Thyng,** who has accepted a similar position on the Boston & Maine.

Clinton L. Heimbach, Roadmaster on the Panhandle & Santa Fe at San Angelo, Tex., has been named assistant professor of railroad engineering for the second semester of 1953-1954 at the University of Michigan.

USE TIE PLATE LOCK SPIKES

for Minimum Annual Cost of Ties in Track



• hold gage • prolong life of ties

• save maintenance expense

LOCK SPIKES hold tie plates firmly in place on cross-ties and bridge timbers. They are quickly and easily driven, or removed, with standard track tools. Driven to refusal, the spread shank is compressed by the walls of the hole. Tie plates are held against horizontal and vertical movement under spring pressure. Play between the spike and the hole is eliminated—gage is held and plate cutting is overcome.

LOCK SPIKES not only become integral with the tie plate, but also the lateral pressure by the legs against the sides of the tie hole, binds the spike in the tie. This unique feature gives tight adhesion between tie and plate.

LOCK SPIKES were first installed in 1947. Since they have been in track, no maintenance whatever has been required. Cost of installing in track is low and comparable to cut spikes. The advantages and saving only found in Lock Spikes reduces the annual cost of ties in track and maintenance expense to a minimum. We invite your investigation.

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Samuel L. McManus, supervisor of the roadway shop of the Southern at Charlotte, N. C., has been appointed supervisor of work equipment at Knoxville, Tenn., to succeed **William R. Jacobs**, who, as announced elsewhere in these columns, has been appointed assistant engineer at Charlotte.

Obituary

Albert M. Traugot', retired chief engineer of the Virginia, died at Norfolk, Va., on January 1 at the age of 71.

J. Pickrel, roadmaster on the Burlington, at Lincoln, Neb., died on January 1 as the result of an automobile accident.

Association News

Mississippi Valley Maintenance of Way Club

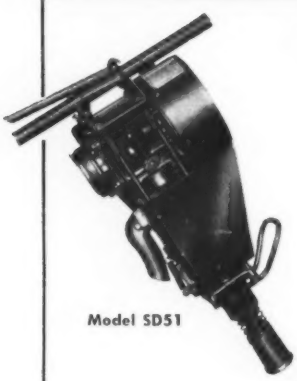
The March meeting was scheduled to be held on the eighth at the DeSoto Hotel, St. Louis, with Roy P. Hamilton, superintendent of safety, Frisco, as the principal speaker. His subject: "Supervisors' Responsibilities in Safety." Two safety films were also scheduled to be shown, one entitled "The Gamblers" (produced by Caterpillar Tractor Company), and the other "Long-Way Butch."

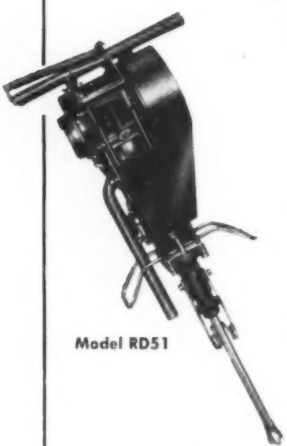
At the February meeting, held on the 8th, the attendance was 256. As of that date the membership totaled 663. The goal is to reach a membership of 700 by March 15 when the rolls will be closed for the club's yearbook.

At the April meeting, which will be held on the 12th, also at the Hotel DeSoto, the principal speaker will be J. P. Hiltz, Jr., chief engineer maintenance of way, New York Central System, who will talk on "Decentralization in the Maintenance of Way Department." His address will be supplemented by the showing of a film, entitled "The Maryland Road Test," which was produced by the U. S. Bureau of Public Roads.

Metropolitan Maintenance of Way Club

A dinner meeting of the club will be held at The Railroad-Machinery Club of New York, in New York, on March 4. This is a change in date from February 25 as previously announced. The guest speaker for the evening will be S. R.


Model SD51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GASOLINE HAMMER SPIKE DRIVERS and PAVING BREAKERS

Deliver 2000 powerful blows per minute for driving spikes, busting concrete, digging and tamping. Completely self-contained—need no auxiliary equipment. One man operation.

Gasoline Hammer ROCK DRILLS

Powerful, one-man, self-contained units with automatic rotation of drill bit. For fast, easy drilling of up to 2" dia. holes in rock. Exhaust designed for automatic cleaning of drilled hole.

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Complete units which require no auxiliary power equipment. Develop 3000 to 16000 ft. lb. blows for low or high frictional resistance. Easily set up as mobile crane unit for concrete, steel or wooden piles.

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Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 13-15, 1954, Conrad Hilton Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

American Railway Engineering Association—Annual Meeting, March 16-18, 1954, Palmer House, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—Annual Meeting April 26-28, 1954, Chalfonte-Haddon Hall Hotels, Atlantic City. W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—Next meeting, January 25. E. C. Patterson, secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer Room 1008, Frisco Building, 906 Olive street, St. Louis 1, Mo.

National Railway Appliances Association—J. B. Templeton, Secretary, 1020 So. Central avenue, Chicago 44; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Roy M. Edmonds, Secretary-treasurer, 1221 Locust street, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 13-15, 1954, Conrad Hilton Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

Hursh, chief engineer of the Pennsylvania, who will speak on the subject of "Engineers in Railroad Management."

Northwest Maintenance of Way Club

The March meeting of the club will be held on the 25th at the Midway Civic Club, 1931 University avenue, St. Paul, Minn., at 6:30 p.m. Principal speaker will be Martin V. Coffey, general sales manager of the Philip Carey Company, whose subject will be "Selling America."

American Wood Preservers' Association

The annual convention of the association will be held on April 26-28 at the Chalfonte-Haddon Hall hotels, Atlantic City, N.J. The program will include a number of committee reports and addresses of special interest to railroad men.

S. R. Hursh, chief engineer, Pennsylvania, will speak on "The Future of the Wood Tie in Railroad Maintenance and the Contribution of the Tie Treating Industry in Prolonging Its Life." Among other addresses, R. D. Graham, Oregon Forest Products Laboratory, will speak on "The Air Seasoning and Preservative Treatment of Crossties from Eight Oregon Conifers," and J. A. Vaughan, Southern Wood Preserving Company, will discuss "Controlled Air-Seasoning." The president's reception will be held on Sunday afternoon, April 25.

Supply Trade News

General

The Clark Equipment Company has announced plans to build a new plant near Benton Harbor, Mich. It will be located on a 100-acre tract of land and is expected to be in operation before the end of 1954. Containing 145,000 sq. ft., the building will be used as an assembly plant for a new line of tractor shovels and also for the assembly of power shovels now made in another Benton Harbor plant. The tractor shovels will be marketed under the "Michigan" trade name—the first new items of construction equipment developed by Clark since acquisition of the Michigan Power Shovel Company last May. In the interim before the new plant is completed, the new products will be assembled at Clark's Buchanan, Mich., plant.

Personal

R. N. Turner has been appointed railroad sales manager for the LeTourneau-Westinghouse Company at Peoria, Ill.

Charles R. Sherman, assistant to the president of the Reade Manufacturing Company, Inc., Jersey City, N.J., died recently.

Courtesy R. H. Bogle Company

WEEDONE® BRUSH KILLER 977. The brush killer designed for use in an oil-water carrier. For foliage spray. Gives whitewashed appearance to sprayed areas, thus helping to eliminate "skips."

RELY ON ACP FOR PROVED BRUSH-KILLING PRODUCTS AND TECHNIQUES

ACP pioneered chemical brush killing and has maintained its leadership through the work of its internationally known research men. No other producer has more "firsts" to its credit in this new field. No other producer is better organized to bring you new developments as soon as they appear. And for special problems we have devised special formulations. Use ACP products to be sure of getting the newest formulas specially adapted to your needs.

WEEDONE BRUSH KILLER 64. The most effective general purpose brush killer yet developed. Kills over 100 weeds and woody plants.

The preferred killer for basal spray. Basal spraying extends spraying season over whole year, because it is equally effective on growing or dormant vegetation.

Based in oil, this versatile brush killer can be sprayed on cut-over stumps. This treatment kills tree roots and successfully stops growth of next season's suckers.

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Agricultural Chemicals Division

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Chemicals ACP Processes

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Q and C Universal Type Guard Rail Clamps have sturdy yokes of drop forged heat treated steel designed of I beam construction to insure extra strength and holding power.

One size of yoke is suitable for a range of rail sections which simplifies and reduces your storeroom stocks.

Order now for early delivery.

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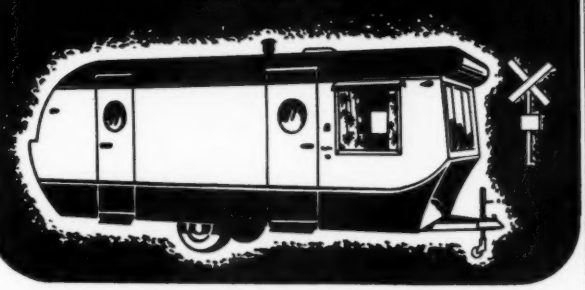

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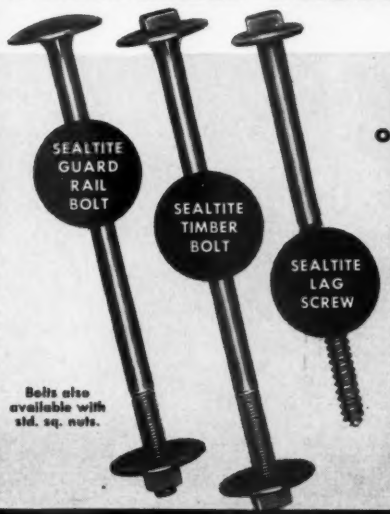

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Manufacturers' Literature

Following is a compilation of free literature, pamphlets and data sheets offered by manufacturers to the railroad industry (some described in advertisements in this issue). Circle the number (s) on the coupon below to receive the information desired; the requests will be sent direct by the manufacturers.

1. MOTOR GRADER. *Allis-Chalmers Tractor Division.* 2-color, 26 page Catalog MS-451, "The Job-Proved Allis-Chalmers Model D" completely illustrated, describes and gives specifications for the Model D motor grader.

2. CATERPILLAR SERVICE FACILITIES. (*Caterpillar Tractor Co.* 8-page booklet No. D410 "Your Job, Your Equipment and Caterpillar Service" pictorially depicts the service facilities of Caterpillar dealers, showing both shop and field services.

3. FRONT END LOADERS. *LeRoi Company, Transo Division.* New 8-page, 2-color bulletin "Powerful Traction and Production on all Four Wheels" illustrates photographically and with sketches features of the 4-wheel drive unit at work, its design and safety features.

4. STOCKPILE LOADERS. *Athey Products Corporation.* Form No. A382 "High Capacity Loading For High Profits" is an 8-page, illustrated booklet showing specifications and application data on the Athey HiLoader.

5. HARDFACING ALLOYS. *American Manganese Steel Div.* Amsco Hardfacing Alloys 48-page, 2-color catalog shows the Amsco complete line of hardfacing and buildup rods and electrodes; it includes over 70 photographs and full metallurgical and physical properties for the four automatic and 15 manual rods and electrodes.

6. ELECTRIC SWITCH LAMP-LIGHTING. *National Carbon Co. div. of Union Carbide & Carbon Corp.* 6-page illustrated brochure summarizes all of the Why's and How's of electric switch lamp lighting.

7. INDUSTRIAL EQUIPMENT. *Allis-Chalmers Tractor Division.* 36-page general line catalog "Presenting the Allis-Chalmers Line" pictorially describes the company's entire line of industrial equipment, including the HD-15 crawler tractor with a choice of two drives.

8. TIE DRILL. *Nordberg Mfg. Co.* Bulletin #199 gives complete details on the new Nordberg Tie Drill, the fastest tie drill.

9. FIRE AND WEATHER RESISTANT. *The Zone Company.* Free booklet completely describes the Libbey-Zone Process, the fire prevention and weather resistant system for wooden railway structures.

10. PORTABLE TRACK TOOLS. *Racine Hydraulics & Machinery, Inc.* New catalog shows the complete Racine line of rail tools.

11. HARDSURFACING WELDING ELECTRODES. *The Lincoln Electric Company.* Bulletin 466 gives the latest data on the complete line of Lincoln hardsurfacing electrodes.

12. TRACTORS. *Gravely Tractors, Inc.* 24-page booklet "Power vs Drudgery" gives complete information on the 5-hp. Gravely tractor and the 21 tool attachments adaptable to it.

13. SPIKE ANCHOR. *H. T. Kennedy Company, Inc.* Bulletin S-3 gives complete data, performance facts and comparative costs on the Macbeth Spike Anchor.

14. WOOD PRESERVATIVE. *The Dow Chemical Company.* Booklet "Pointers on Penta," Plant Wood treating specifications, and sources of treated wood, are all offered by Dow to tell the Pentachlorophenol wood treatment story.

15. TIE PADS. *Johns-Manville.* Detailed information offered on J-M Tie Pads, or any of the other Johns-Manville products (*please specify*).

16. JACKS. *The Duff-Norton Mfg. Co.* Complete information on the No. 117, or other Duff-Norton Jacks for railroad men, offered in bulletin AD18-F.

17. TIE PRESERVATIVE. *Osmose Wood Preserving Company.* Illustrated folder offered giving complete data, and prices, on Osmoplastic Tie Preservative.

18. CORROSION PROTECTION. *The Brooks Oil Co.* Brooks Pamphlet #61 gives complete details on Brooks Barcote which provides corrosion protection in numerous railroad applications.

19. STUDS. *Ramapo Ajax Division American Brake Shoe Company.* Prices and complete descriptive literature offered on the Racor Stud.

20. SPRING WASHERS. *Reliance Division Eaton Mfg. Co.* Engineering folder #R53 gives complete details on the Reliance Hy-Chrome Spring Washers.

21. BITUMINOUS CONCRETE PAVING MIX. *Rock Road Construction Co.* Descriptive literature offered on Blacrete bituminous concrete with liquid asphalt mixed with sand and stone.

Reader Service Department **MARCH, 1954**
Railway Track and Structures
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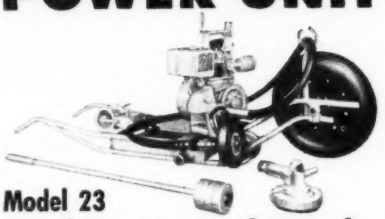

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